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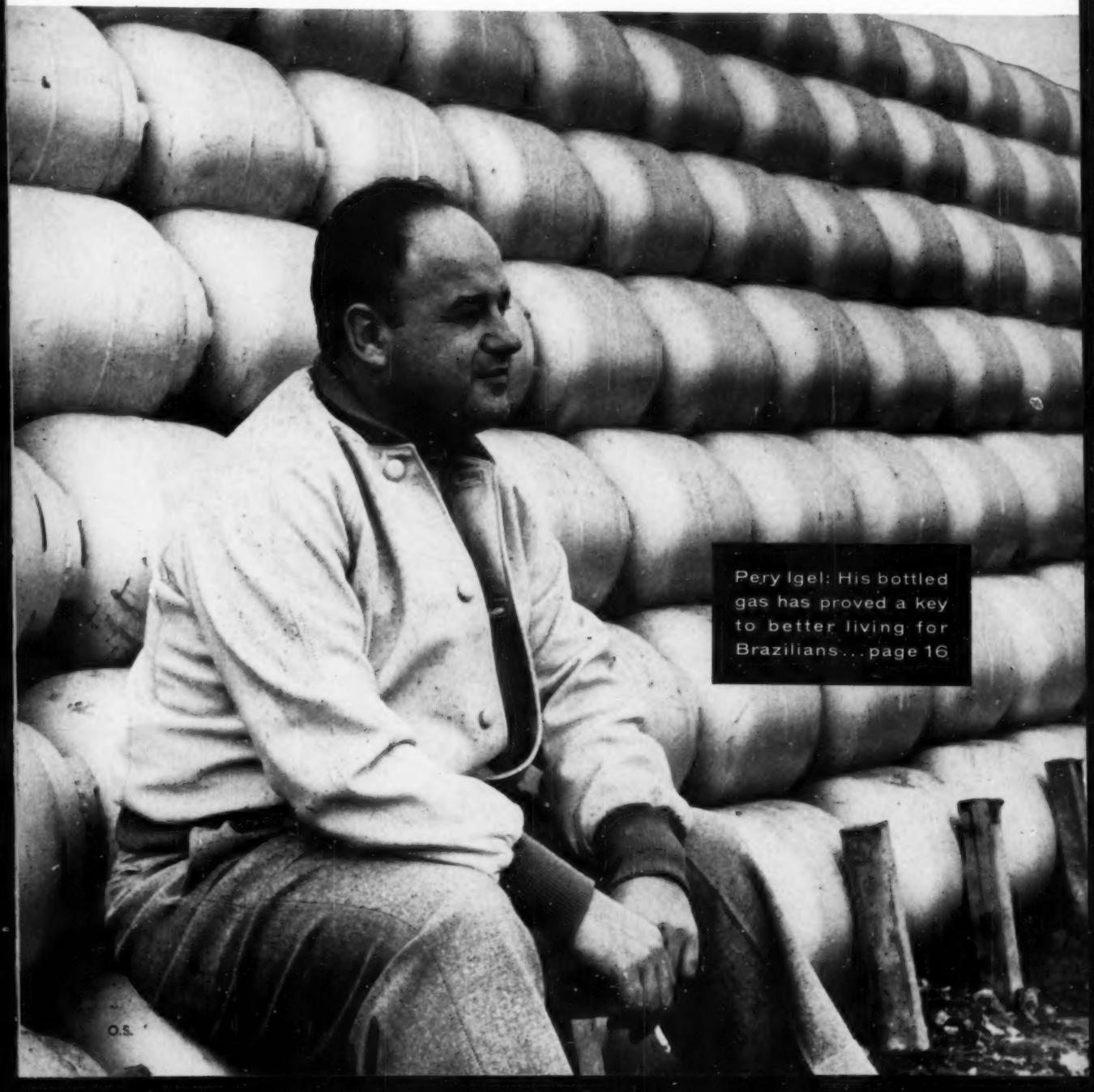
International Management Digest®

SEPTEMBER 1959
ONE DOLLAR (U.S.)

THE McGRAW-HILL PUBLICATION OF WORLD BUSINESS INFORMATION



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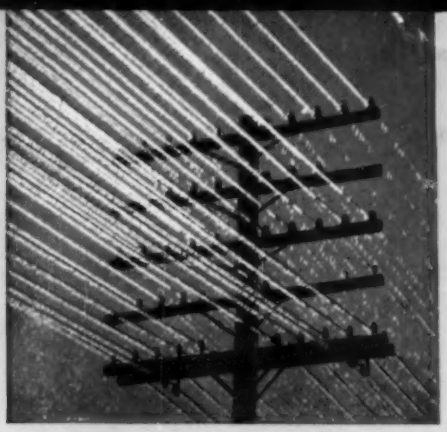

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World Affairs

Now the Seven (and maybe more)

Just how Europe's "little free trade area" will affect world commerce is not yet clear. But businessmen should note the timetable, and the trend, and make whatever plans they can.

Next month: A list of area products involved (mostly industrial), and processes that will qualify goods as area products, is due from the experts.

January 1: The treaty establishing the bloc will be completed, and very likely approved, by Britain, Sweden, Norway, Denmark, Austria, Switzerland, and Portugal. Finland may be able to join later. Eire and Iceland are said to be interested, too.

July 1: The members will grant each other a 20% tariff cut. Quotas restricting industrial goods will be enlarged. These measures of the Seven are designed to parallel those of the Six Common Market nations.

In two years? five years? Hard bargaining between the Seven (or more) and the Six will begin, an effort to link the two trading blocs.

Note that the free trade area is a much less strict and inclusive system than that of the Six. Each member can negotiate and maintain his own tariff rates with Africa, Asia, the Americas, the remainder of Europe. There will be numerous "escape clauses". Still the system will tend to encourage trade among the Seven at the expense of outsiders.

The Seven hope this will help them strike a bargain with the Six. London counts on the potential trade loss to Germany, and to a lesser degree to Holland and Belgium, to produce on agreement despite present objections of France. Germany sold more last year to the Seven—about $2,400-million worth—than to its Common Market partners.

Will France agree? Some observers believe it is as much a political problem as an economic one. They wager that France will insist on a high political price (plus trade concessions) before it will agree to heal the trade split.

A major effort to bridge the gap between the Seven and the Six may come at next year's session of the General Agreement on Tariffs & Trade (IMD—June, p. 1). The U. S. may throw its weight behind a move for mutual reductions of quotas between the two trading blocs.

Protectionism and trade wars will be hard to justify in the fast-expanding markets that seem to lie ahead in Europe. Prosperity should encourage concessions. But if there is a business downturn, watch out.

Welcome to Investors

More nations are putting out the "welcome" sign for private foreign capital. The examples below appear to mark an important trend.

Spain: As part of its drastic economic reform, Spain is reversing its hostile policy toward foreign investors. Now outsiders can hold a 50% share (it used to be 25%) in Spanish industrial enterprises, even more with Cabinet approval. Curbs on return of profits and capital are eased.

Japan: An important new policy that encourages foreign investment and licensing agreements is in train, thanks to pressure from Japanese

producers eager for foreign technical and marketing ties. (Last month more than 200 applications for new Japanese-foreign licensing deals were pending.)

Cuba: For all his revolutionary alarums and excursions, Fidel Castro insists that Cuba welcomes foreign investment in industry (but not agriculture). This is the result of prodding by his more conservative, financially-minded advisors. A few foreign investors—two or three U. S. companies among them—are gambling that the worst of the confusion is over and are going ahead with industrial plans. But most outsiders prefer to wait and see.

Thailand: A strong effort to attract investment is underway as part of a new development drive. Tax exemptions are available. The first U. S. company to participate in the new program—a drug manufacturer —has just signed up.

Nigeria: A favorable climate for investment is expected when Nigeria becomes independent next year. There will be provision for tax holidays of up to 10 years, free importation of equipment, and probably a liberal profit remittance law. Members of a U. S. trade mission to Nigeria, just returned, speak of "unlimited" investment opportunities.

Saudi Arabia: The U. S.-owned Arabian American Oil Co., with the blessing of the King, is trying to attract foreign industry to Saudi Arabia. The lure: cheap natural gas, and Aramco's help in getting started.

Pakistan: Business Profits Tax has been abolished, with revised rates incorporated into the basic tax structure. A two-year tax holiday is now available to industries based primarily on local raw materials. Foreign capital is sought for heavy engineering, chemicals and synthetic distillates, pharmaceuticals, mineral exploitation, and capital goods.

Why the Americans Look Overseas

American executives expect the sales of their overseas subsidiaries to increase much faster than export sales this year and next.

U. S. export sales are expected to increase only 1% this year, and only 4% next year (to nearly $12,500-million). In contrast, sales of overseas plants are expected to increase 7% this year, another 9% next year. The figures are from a survey by the McGraw-Hill Economics Department.

At the same time, not all of U. S. industry is pessimistic about exports. If expectations hold true, there will be a 11% increase in fabricated metals and instrument controls this year, a 7% rise in 1960; a 6% gain for food and beverages this year, 9% in 1960; a drop of 9% for autos this year—but a 10% increase next year.

Still, only one industry, non-electrical machinery, expects its export sales to increase faster this year than sales of overseas subsidiaries. And this industry has become the U.S.A.'s largest exporter—accounting for almost twice the dollar volume of second-ranking chemicals.

The McGraw-Hill survey bears out the increasing interest in European facilities. The proportion of total U. S. investments going to Europe was less than 40% in 1957 and 1958; next year, it will be about 47%.

Industries concentrating the most heavily on Europe are machinery and transportation equipment. Combined, they will account for almost 70% of U. S. investments scheduled for Europe next year.

Petroleum still intends to spend more than all manufacturing industries combined—and 60% of its investment goes into the Western Hemisphere. But manufacturing companies will be setting new records, with plans for a $957-million outlay this year.

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SEPTEMBER 1959
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International Management Digest.

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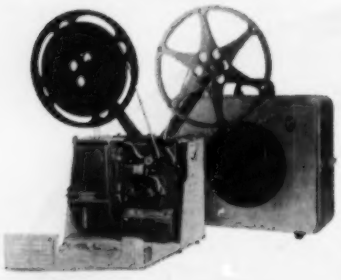

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Lessons from the Labor Unions

AN ARTICLE on page 12 suggests that a turning point has come for American trade unions. Employers are finally taking a stand against automatic yearly wage increases not earned by rising productivity. The Congress and the courts are moving to at least moderate the frequently awesome power that some unions hold over the national economy. There is public support: Many Americans believe that trade unions have gone too far in recent years.

But these developments, important as they are, should not be allowed to obscure the benefits which U. S. unions have conferred on their members, and, many will say, on the economy as a whole. The past 30 years have seen the slow, hard evolution of mutual respect (though not always love) between militant labor and often reluctant management. In some industries—the garment trades are an example—labor-management cooperation has produced great gains in efficiency, in the manager's office as well as at the worker's bench. And while a few trade unions have become tainted with corruption and gangsterism, most are honest and responsible.

American unionism has been militant. But it has avoided ideology and politics and has instead concentrated its efforts on hard, arm's-length bargaining for better wages and working conditions. The campaign has been successful—so successful that the separate identity of a "working class" is fast withering away.

The results confound the teachings of Karl Marx—and the propaganda of *Pravda*. In an effort to explain the exhibition of American consumer goods that opened recently in Moscow, that newspaper gravely reminded its readers that, after all, the U. S. A. has always been "a paradise for the capitalists and slavery for the workers." It was obvious, *Pravda* explained, that the array of attractive goods were reserved for the capitalists.

THOUGH hardly a "slave," the American wage earner in 1900 was not much more than a production unit, living on the edge of subsistence. He was but a marginal market for the nation's goods. Half of his income went for food, a fourth for housing—and neither was adequate. There was precious little medical care, education, and respite from a 10-hour, six-day job. If he was lucky, the wage earner had 6¢ of every dollar left over for nonessentials.

Now the buying power of the average worker is at least three time greater than it was 50 years ago—even after allowing for price increases and a work week cut by 40%. As for the "non-essentials," the worker spends 43¢ of every dollar on such items. Auto ownership is taken for granted, and half of all workers own their own homes, complete with a battery of work-saving appliances.

Workers are now far and away the most important group of consumers in the U. S. A. Their way of life is all but indistinguishable from that of their salaried and professional co-citizens. Homes, clothes, credit terms, food, vacations, cars, education—all of these are alike and becoming more so.

THE LESSON of all this? Perhaps it is that vigorous free trade unions can help workers attain the living standards and status in society they have sought for so long. As such, unions can be an important engine of a nation's economic growth. If there is a problem for the future, it is to see that the engine does not over-speed or get out of control.

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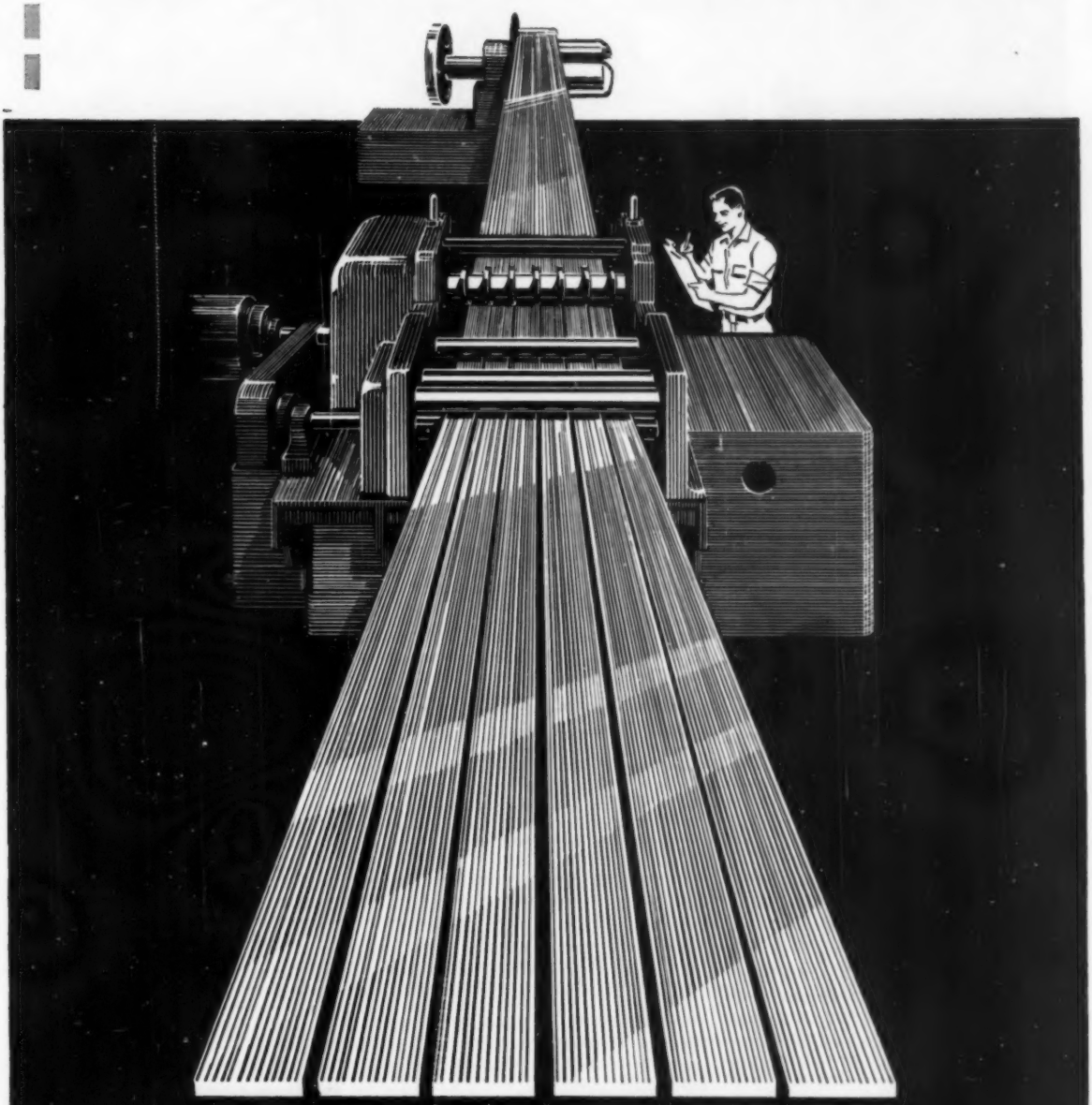

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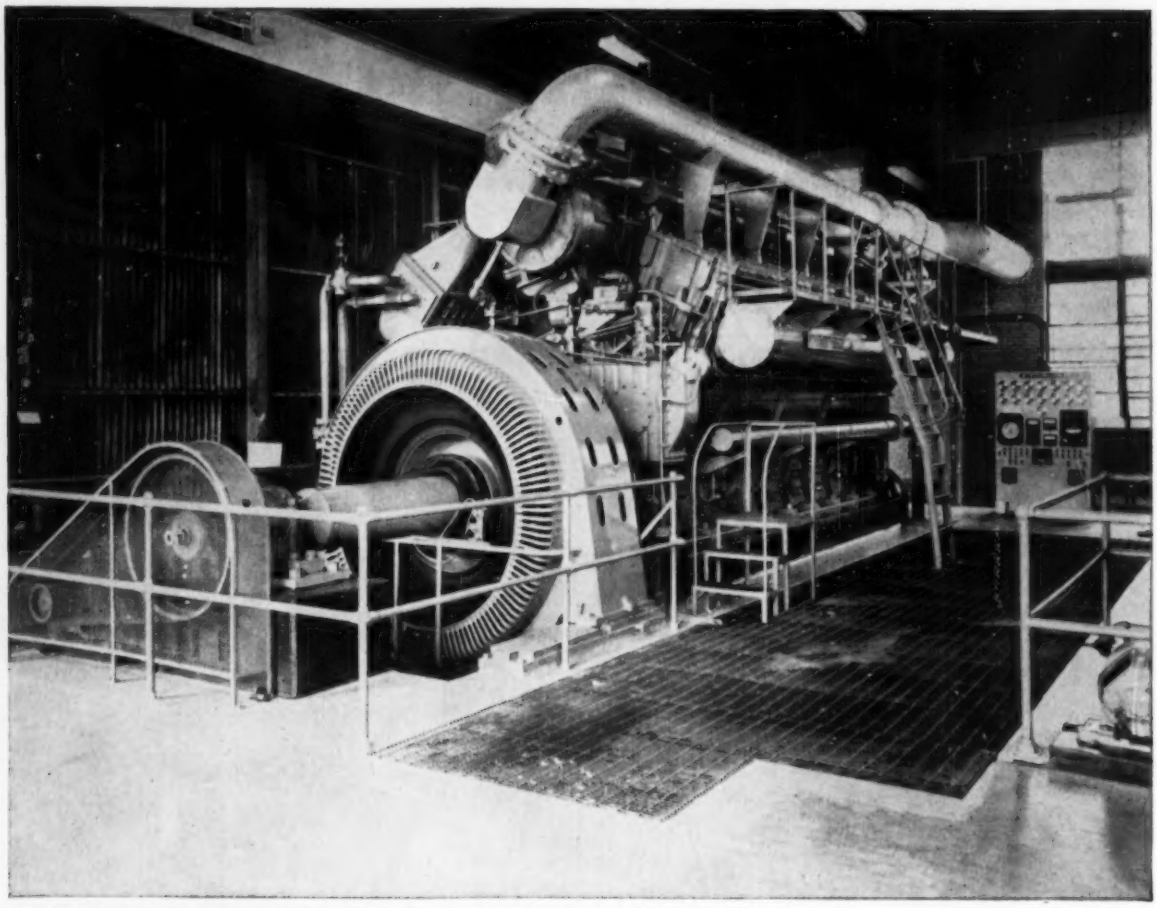

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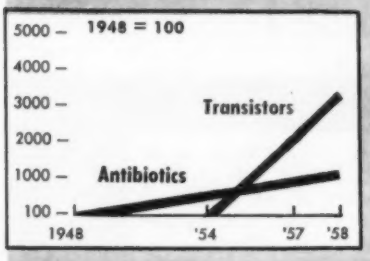
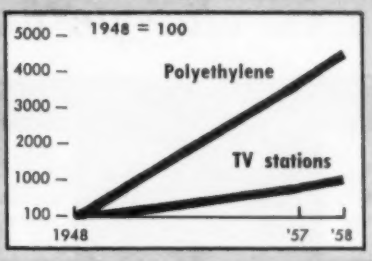
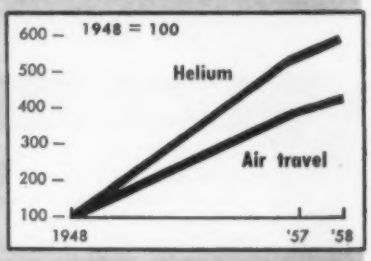
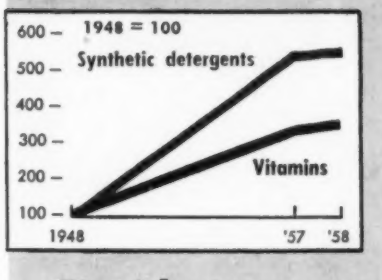
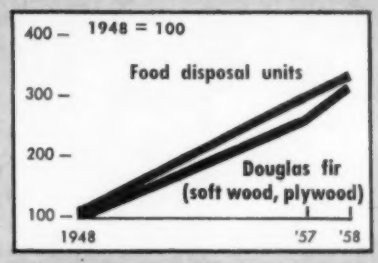
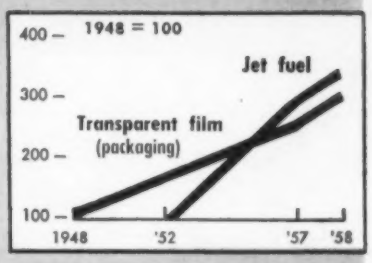




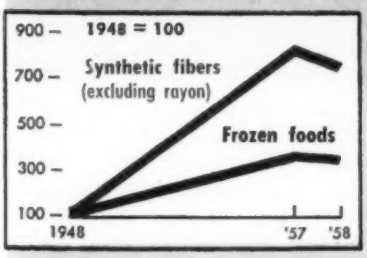


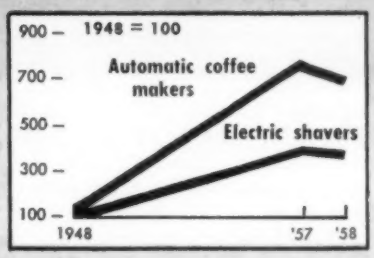


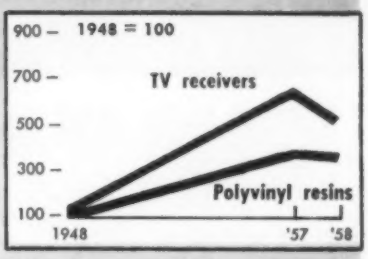




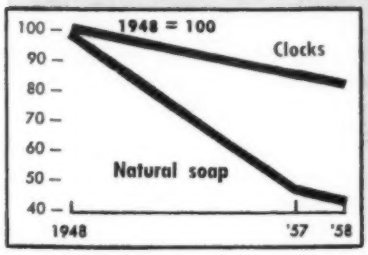
Rapid postwar growth checked by 1958 recession

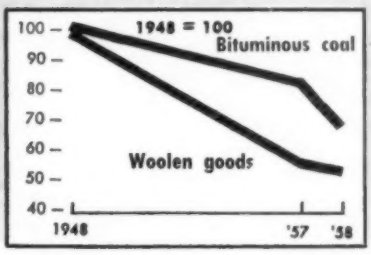


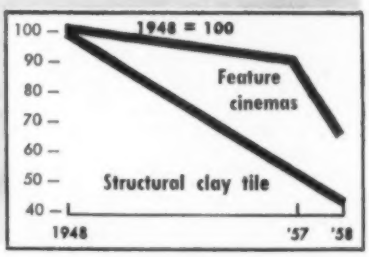




Declining steadily







10 Years of Growth, Change, Decline

The U.S. Department of Commerce has completed a searching analysis of 300-odd products and services in the American economy—to see which have grown fastest since 1948, which have stumbled during recession, which are in more or less permanent decline. Some of the results are charted above. Although the examples are strictly in and of the U.S.A., the pattern of growth, change, is now, or will be, applicable to other nations.

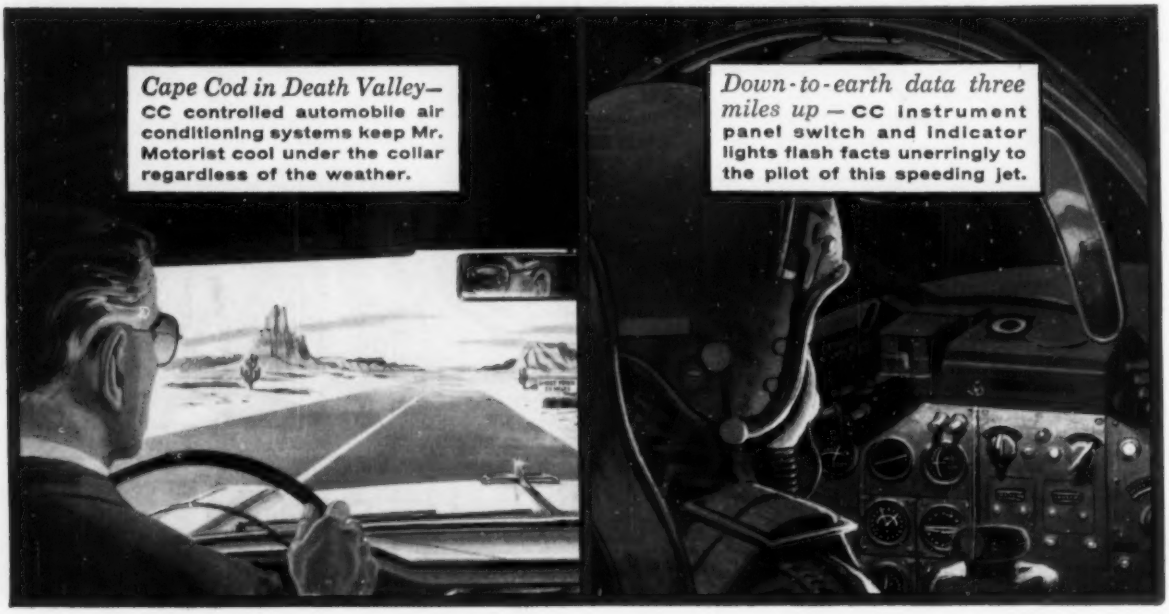
Many of the fastest-growing items – "glamor" products such as transistors, plastics, antibiotic drugs, jet aircraft fuel – maintained a production uptrend despite the 1958 recession. The persistent growth of air travel despite strikes, recession, and other troubles is particularly noteworthy.

The second group above contains many consumer products, and suggests that recession caused people to postpone purchases. Saturation of markets, as in the case of TV receivers, may also be a factor. It is significant that of the 300 products tabulated, two-thirds suffered production losses last year.

Declines in the last group are the result of many factors: substitution of more efficient or cheaper items; changing consumer tastes; displacement by synthetic materials, as in the case of soap and woolen goods.

Controls Company of America

(*who's in charge here?*)


Cape Cod in Death Valley— CC controlled automobile air conditioning systems keep Mr. Motorist cool under the collar regardless of the weather.
Down-to-earth data three miles up — CC instrument panel switch and indicator lights flash facts unerringly to the pilot of this speeding jet.

how can we work for you?

Wherever man is on the move, getting there is safer, faster and more comfortable—thanks to the controlling influence of products by Controls Company of America.

For example, on America's highways CC pioneered air conditioning systems made up of A-P valves, drier-receivers and distributors convert heat and humidity into cool comfort. Redmond high-quality motors actuate window lifts and seat adjusters. Level ride mechanisms and stop lights are also activated by CC controls. And on trucks CC switches control fuel line pressure and 2-speed rear axles.

High in the air, Hetherington electro-luminescent control panels will soon light the way for all types of aircraft. Other Hetherington switches mean 100% dependability for service where one failure means disaster. Miniature switches and switch lites set new standards of reliability under the most extreme conditions of shock and vibration. And even prior to takeoff, Milwaukee underwing nozzles refuel aircraft safely and swiftly.

These are just a few of Controls Company of America's controlling interests in transportation. Many others exist. Write today for full details on this comprehensive control service.

This is our line

Time Control

Flow Control

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Motion Control

If you're looking for a better way to control time, flow, temperature or motion, our creative engineering service may help you find it. We can supply single controls or complete, integrated systems.

Creative Controls for Industry

CONTROLS COMPANY OF AMERICA

EXECUTIVE OFFICES: SCHILLER PARK, ILLINOIS

HEATING AND AIR CONDITIONING CONTROLS DIV. MILWAUKEE, WIS.

APPLIANCE AND AUTOMOTIVE CONTROLS DIV. SCHILLER PARK, ILL.

REDMOND COMPANY, INC. OWOSSO, MICHIGAN

HETHERINGTON, INC. FOLCROFT, PENNSYLVANIA

MILWAUKEE VALVE CO., MILWAUKEE, WIS. • LAKE CITY, INC., CRYSTAL LAKE, ILL. CONTROLS COMPANY OF AMERICA (CANADA) LTD., COOKSVILLE, ONTARIO, CANADA • INTERNATIONAL DIVISION, SCHILLER PARK, ILL., U.S.A. • CONTROLS AG, ZUG, SWITZERLAND • CONTROLS MAATSCHAPPIJ EUROPA N.V., NIJMEGEN, HOLLAND • CONTROLS COMPANY OF AMERICA (ARGENTINA) SRL, BUENOS AIRES.

Britain: Confident As It Looks Ahead to the '60s

A SUNNY SUMMER is ending in Britain. And as they return from holiday, most Britons seem confident that the problems just ahead —the seasonal strain on sterling, the expected election—will do no harm to their feeling of wellbeing. Sterling's reserves are high, unemployment is low, business is rising, consumers are buying merrily.

Britain's confident mood is understandable. So is that of the Conservative government. Prime Minister Macmillan remarks that for the first time in his 35-year Parliamentary career, the nation has enjoyed the blessings of stable prices and of full employment at one and the same time.

• **Politics?** — Admittedly, Macmillan's pronouncements have a political ring. But outsiders agree he has a case.

In the U.S.A., *Business Week* recently reported that at last, Britain has the resources to meet both home and foreign demands on its economy. The influential Federal Reserve Bank of New York finds "firm ground for hope . . . that Britain may be on the threshold of a period of sustained growth without inflation."

Yet many in the world business community wonder how Britain reached this new estate. And they wonder if it will last.

I. Luck—and Hard Work

There has been a little bit of luck, and a lot of resourcefulness and hard work.

Certainly the Labor opposition can argue that luck—in the form of falling import prices—has helped greatly. But so have other factors. By taking drastic financial action two years ago, the Macmillan government has brought inflation under control (to a minimal 1% in the past year), demonstrating to the world that sterling's value shall be maintained. At the same time, Britain managed to earn more from foreign sales in 1958 than it paid for its purchases—the first such surplus since the 19th Century.

Add earnings from shipping, banking, etc., and there is a comfortable surplus and rising gold-dollar reserves. Finally, London has partly regained its stature as a world financial center.

• **Trade First** — Finance follows trade, and the improved financial situation is a measure of greater competitive strength. British exports are almost twice as much by volume as they were before World War II. Note the fast-rising sales in the U.S.A. and West Germany: Ability to sell in markets of principal competitors is the acid test.

Business Week lists some of the factors that have worked the improvement: expansion of home food production, reduction of imports, a doubling of industrial output, a switch from old industries like textiles to autos, business machines, electronics, chemicals, aircraft. Today, engineering industries account for better than 40% of British sales abroad; prewar it was 24%. Textile exports have fallen from 22% of the total to 8%—about the same percentage that chemicals now contribute to total foreign sales.

It is true that Britain has invested a smaller proportion of its gross product in new plant than have its chief competitors (mainly because of greater claims on its resources, such as defense). Yet it probably leads its Continental rivals in important capital inten-

(*turn to page* 12)

FINANCE: London has regained stature as world financial center and earns a handsome profit for Britain.

NEW INDUSTRY — represented by electronically programmed mill — is more competitive in world markets.

sive industries such as electronics, aircraft, chemicals, nuclear energy.

II. A Temporary Break?

Still there are doubts, abroad and among Britons. Barclay's Bank wonders whether the nation has really reached the end of an era of hard times, or "whether we are merely feeling the warmth of sunshine pouring through a passing gap in the clouds."

Some fear that the expansionist 1959 budget, with its tax cuts and investment allowances, could sow seeds of more inflation, sucking in higher imports and threatening the hard-won payments position. Macmillan disagrees. He and quite a few economists insist that the increased efficiency and capacity of British industry allow ample room for growth in output and productivity without courting inflation.

• **Wage Problem**—That may be true unless another outburst of wage increases such as occurred in 1953-1957 sends costs soaring. And here is where the election comes in. If there is a Conservative victory—and that seemed a fair wager in August—a big rise in wages is unlikely. But if Labor wins, it would be more difficult to keep increases within bounds.

It is also possible that Labor might nationalize steel again. That would shake the confidence of British businessmen in their investment plans, and might shake world businessmen's confidence in sterling.

• **Competition** — A severe problem for Britain is the formidable competition building up abroad, especially in Europe. The Continental markets are growing faster than Britain's prime market in the Commonwealth, and most businessmen believe that in the 1960s a combination of Common Market tariffs and inter-company agreements will bar them from competing. The "Outer Seven" free trade area will help, but it is a poor substitute for the Six. The hope remains that somehow, some time, the two trading areas will join hands.

Meanwhile, Britons realize they must consolidate their present gains, maintain their export industries in top condition with new investment and new development, and keep prices down. ●

End of an Era for American

U. S. employers are taking a stand against constantly rising wages, and for management rights. Their experience provides lessons for industry everywhere.

AS THE AMERICAN STEEL STRIKE moved into its fourth week, an observer of the trade union scene said to INTERNATIONAL MANAGEMENT: "I wonder if industry in other countries will make some of the mistakes in labor relations that we Americans did. It could be costly—both for industry and for the workers."

He believes that the midyear steel strike, regardless of the final settlement, marked the end of an era in U. S. labor-management relations. For the first time in years, a major American industry had bargained to a showdown with its rich and powerful union without making a specific wage offer or proposing some new welfare scheme.

The era that is ending has been called one of "escalation for all." *Business Week* explains it this way: "The great economic forces in society—the labor unions, the business corporations, the farmers, the government itself—rode upward to ever higher money incomes by means of almost automatic increases in prices and wages, each new rise developing out of the preceding one. The inevitable result was inflation."

• **Stand**—Why take a stand now? There are several reasons why the issue came to a head this year.

Businessmen, government, even many workers see evidence that the U. S. A. could become a relatively high-cost, inefficient producer, losing markets at home and abroad (IMD, Aug., p11). And more Americans recognize that the effects of inflation on savings make it increasingly difficult to manage the nation's public debt without causing more inflation.

There are several other factors. The steel industry felt confident that its customers were well-supplied and that businessmen generally supported its stand. The industry knew also that the workers themselves had little stomach for a strike. And the sordid revelations of racketeering in some trade unions (though not the steelworkers') had tended to swing public opinion away from labor.

• **No Turning Back**—Few Americans want to see the end of wage gains and other improvements for unions. Nor do they want to turn back the clock to the days when unions were impotent and workers hardly shared in the nation's wealth. The rapid rise in the workers' living standard has been the great engine of U. S. economic growth (see page 6).

What the fight is about is the trade union policy of bargaining steadily upward — insisting on "more and more and more" each year, even though it may not be earned by rising output per man hour. It is not only a question of money wages: Management's right to determine working practices in the mills, a prerogative that the industry let slip away during the postwar boom, is a prime issue. Technological advance has made work practices suitable to the 1930s and 1940s costly and inefficient in the automated 1950s.

• **History** — Thirty years ago American unions were small and powerless; labor was the "underdog." Then President Roosevelt and the "New Deal" gave labor higher status. The spread of union organization in mass-production industries gave it greater strength. A friendly Administration in Washington guaranteed labor's rights; in a depressed economy, a worried public approved.

It was a time of social revolution in America, and this revolution gave unprecedented power to the trade unions.

By the start of World War II, the unions had strength enough to bargain not just for a subsistence wage, but for considerably more—continuing improvements in wages year by year. And they had become widespread enough to influence the national wage level.

• **Postwar**—After the war, management went through the motions of protest. But times were good, and products could be sold at ris-

Trade Unions

ing prices. Inflation was a worry, but it seemed more important—far more important—to keep products flowing to market than to face a strike.

In the steel industry, the "escalator" was a fast one. Wage rise followed wage rise, pension schemes came too, along with automatic cost-of-living adjustments. Other major unions made similar gains. In fact, it was the automotive industry that formalized, in 1948, the principle of continuing raises — "something more" each year. Government was anxious for labor peace and was friendly with the unions. When it intervened in a dispute, the unions usually gained.

Even though the power balance began to shift in 1947, with the passage of stricter laws regulating union activities, most employers were more afraid of losing production and markets than of inflation. As long as higher labor costs could be passed on to the consumer, they refused to make a real fight. There was even a regular wage (and price) increase at the height of the 1958 recession.

• **No Cuts**—It was easy. So much so that some observers, including some steel customers, argue that the U.S. consumer has been the victim of a conspiracy between "big labor" and "big business" that results in constantly rising prices. These observers put some of the blame for the steel strike on the industry's management—for giving away too much too easily in the past, and for maintaining rigid high prices when profits might well allow either a small wage increase or, preferably, a cut in steel prices. The recent reduction in British steel prices, as well as U.S. price cuts in heavy turbines and metal cans, are frequently cited.

Nonetheless, industry seems to have the better part of the debate now. Labor has long since lost its "underdog" status and the public is uneasy about the union's economic power. Unions have not had as easy access to the White House under the Eisenhower government. Congressional committees have unearthed evidence of corruption and abuses in a few unions, and this leads to public suspicion of all unions. And, of course, there has been mounting public concern with inflation.

All this set the stage for the 1959 showdown.

• **What's Inflation** — Ideas vary on what may be accomplished by the fight against inflationary wage increases. Usually the argument revolves around what is inflationary and what isn't.

Some contend that regular rises in wages must be halted permanently. Others say that there must at least be a hiatus, a period of status quo in wages. Still others argue that the employers will win their point if wage rises can be limited to an increase not exceeding the annual gain in output per man hour.

It was known as early as June that some important government officials thought a small increase in steel wages to be justifiable—and not inflationary. They believed, as many employers do, that the real object is not to stop wage gains but to hold them in check, and—equally important—to amend those plant working rules that industry considers wasteful and inefficient (but which the unions consider essential to their security).

• **World-wide** — The battle will go on. And its importance is worldwide. *Business Week's* editors put it this way:

"In all the Western nations, an era that began in depression and swept through war and postwar reconstruction is ending—because the inflationary game has become self-defeating for each nation. The steel settlement, and the determined employer resistance leading up to it, promises to be a turning point. . . . The symbolic importance of the settlement will very likely go beyond its own very direct effect on the U.S. economy." (*Adapted from Business Week—July* 4, *p*13, 96; *July* 11, *p*90; *July* 18, *p*23.)

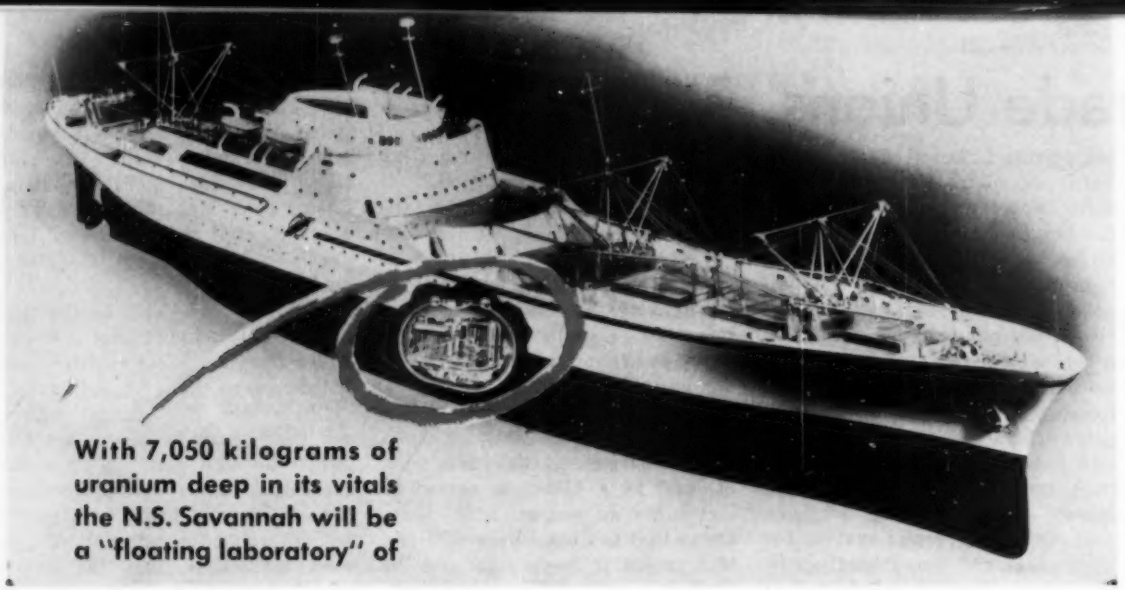
Electronics Booms in Japan

NO OTHER INDUSTRY in the history of Japan has raced ahead as fast as the production of transistors. Output of these tiny electronic devices was 11,600 five years ago; this year it may be close to 30-million. Transistor radios are rushing to world markets, and now Tokyo Shibaura Electric Co. has displayed the prototype battery-powered transistor TV set shown above. Though it is not yet in full production, and costs are high, the little 20 cm. set is a preview of things to come from Japan.

Much of this electronic output is headed for the U. S. A., often in the form of small portable radios. U. S. sales of these jumped 291% last year to 2,500,000—about two thirds of the total exported. The only thing worrying the Japanese is the chance that someday booming sales may stimulate demands in the U.S. Congress for higher tariffs, or quotas.

The new cooperative arrangements being made with U. S. manufacturers are a hedge against this possibility. For example, Tokyo Shibaura recently began making radios, transistors, and tubes for International General Electric Co., to be sold under the IGE name in Europe, Asia, Africa. Others are making parts for radios to be sold in America.

Japan's success is based on lower wages, unusually high skills in handling miniaturized parts, exacting technical standards, and steady capital spending to mechanize and modernize production lines. The government has recently approved an electronics industry capital spending plan for $38-million to complete its expansion program—not only for radio and TV, but for computers and a wide range of industrial electronic equipment.



With 7,050 kilograms of uranium deep in its vitals the N.S. Savannah will be a "floating laboratory" of

Atomic Power for Ocean Shipping

REPRESENTATIVES of 29 maritime nations were on hand at Camden, U. S. A., late in July when Mrs. Dwight D. Eisenhower shattered a bottle of champagne that launched the N. S. Savannah — the world's first merchant ship to be powered by nuclear fuel. The sleek cargo-passenger liner will be able to travel for 3½ years—equal to 15 trips around the earth—on one fueling.

Visiting experts admired the ship's trim lines, her radical truss-shaped cargo gear, the intricate equipment that would make her safe from radiation and sea hazards. But the big question in their minds was what this pioneering vessel would prove for world shipping.

Would it, they asked, demonstrate the reliability, safety, and economy of such atomic ships for the future?

• **Many Plans**—Many maritime nations have plans for atomic-powered ships of one kind or another. The U. S. A. already has five atomic submarines in use, five more nearing completion, another 25 under construction. The U. S. S. R. has its icebreaker Lenin, said to be almost ready for its first cruise in the Arctic. West Germany expects to have an atomic tanker ready by 1961, and others—Sweden, The Netherlands, Japan—are working on similar projects.

But these plans aren't expected to lead to a rush of atomic-ship building in the next several years, according to Lloyd's Register of Shipping. The promise of atomic shipping has opened up new problems in safety, waste disposal, insurable risks. Also, there is the threat that these vessels might be barred from some world ports, as happened when the U. S. submarine Nautilus tried to call at Copenhagen. And both capital and fuel costs will have to come down substantially, Lloyd's reports.

Designers of the new ship emphasize that the Savannah itself will not be economical. Construction and outfitting costs will come close to $41-million, at least 40% more than for a conventional ship of the same size. With its highly-specialized crew of 110, the ship may cost twice as much to run.

• **Floating Laboratory**—The Savannah, however, will serve as a "floating laboratory" when it undergoes extensive tests next year and then moves into commercial service in 1961. Shipping men expect to get answers to crucial questions on what is the best way to build and operate atomic ships.

More than 100 U. S. companies combined their talents to give the ship the most advanced designs, materials, and instruments. Powering the ship's 20,000-horsepower turbine will be a pressurized water reactor designed by Babcock & Wilcox Co. The reactor will be loaded with 7,050 kilograms of enriched uranium oxide clad in stainless steel tubes.

• **Safety Precautions** — Intricate precautions are being taken to make the Savannah safe for its crew and passengers. A giant containment vessel will house the reactor and much of its auxiliary equipment. The bottom half of this container will be set in reinforced concrete; the upper half will be covered with 15 centimeters of lead and 15 centimeters of polyethylene. The builders insist that passengers will receive no more radiation than they receive normally from the earth.

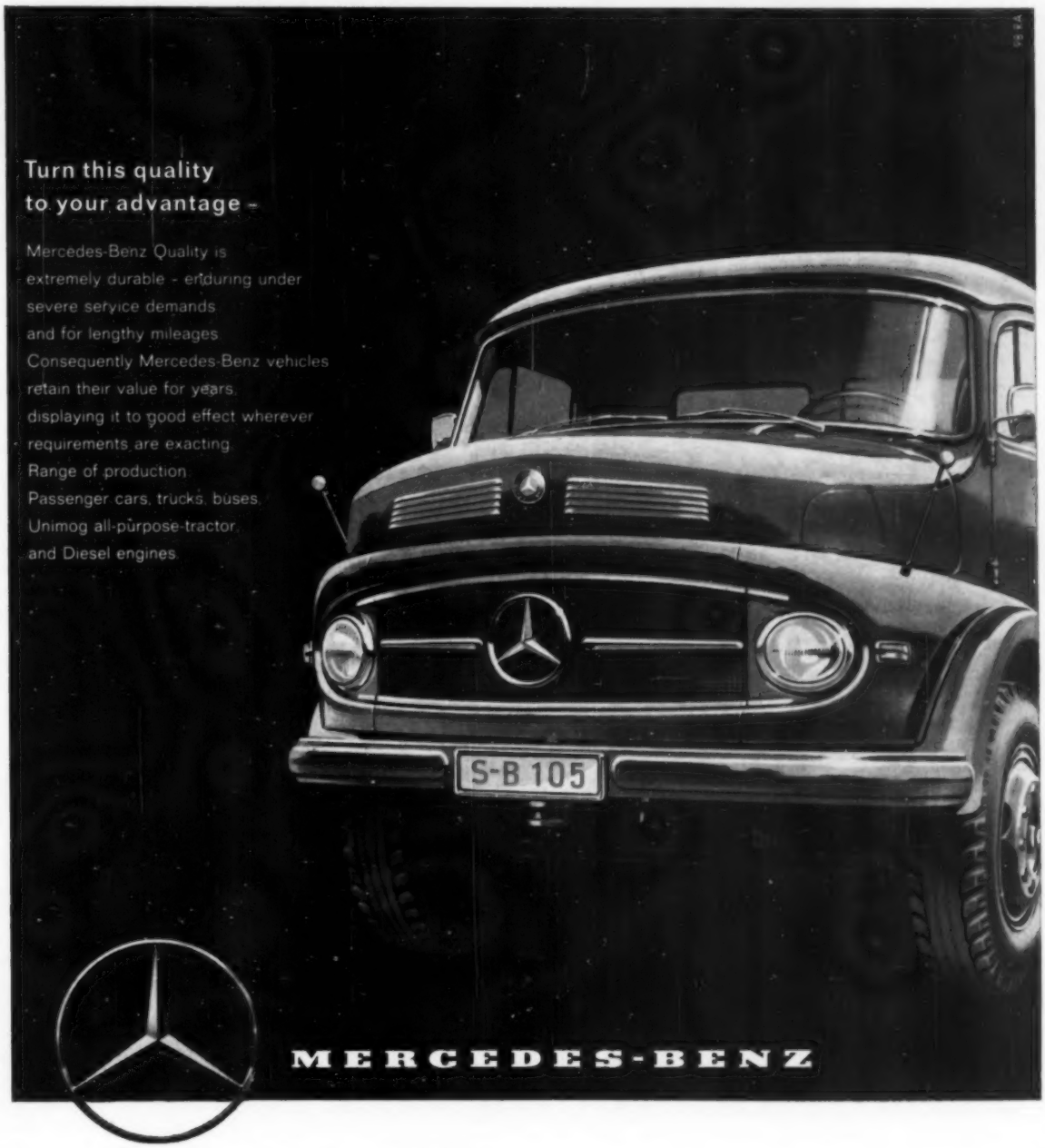
The N. S. Savannah is designed to carry 9,900 tons of cargo and 60 passengers at a speed of a little over 20 knots. Passenger accommodations will include 30 air-conditioned staterooms, a cocktail bar, and a nickel swimming pool.

• **Tankers, Too** — Shipping men have expressed disappointment that the U. S. government is not yet at work on a second nuclear-powered ship. An atomic tanker had been planned, but funds have not been made available.

Meanwhile, several engineers have suggested submarine atomic tankers. The Japanese are reported to be moving ahead with plans for such a vessel. An atomic tanker, they believe, could travel under the Arctic ice pack—as demonstrated by the U. S. nuclear submarine Nautilus—and cut the distance from Tokyo to London almost in half. ●

President As Trail Blazer

In the African republic of Liberia there are two routes from the capital, Monrovia, to Zozor, a town in the nothern part of the country. One of these routes involves a long detour leading over French territory but does offer the advantage of being traversable at least in part. The other route qualifies as such in name only, as it passes through the jungle, across marshes and over tracts of clay soil transformed into bogs of mire by five minutes of rain. This second route crosses altogether 41 bridges consisting of rough logs placed parallel. However, Liberia is an independent country; and the president of this country wanted to travel to Zozor on his own roads – taking luggage along. Such wishes being tantamount to a command, the second route was chosen. But as a president does not walk nor his luggage either, vehicles had to be fetched. Two powerful trucks were selected for the luggage; and as the drivers were in their fortitude a match for the endurance of the vehicles, both the president and his luggage arrived intact at Zozor despite many an apparent impasse. But once word spread about that two trucks had surmounted the infernal mire en route to Zozor, several other vehicles attempted to duplicate this feat of the trail blazerz. Matters came to a regular contest. Everyone determined to ford the muck to Zozor at any cost. But they all had to admit defeat, except for the two Mercedes-Benz trucks, which have now already covered this route on their seventh trip and are even settling down to somewhat of a dull routine.



Ernesto (left) gives a pat of confidence to son Pery, who now heads his Ultragaz combine.

Brazil's giant fuel distributor began

Success Trail Leads from Fuel to

THE FATHER AND SON TEAM shown above have built an empire in fuel and domestic appliances. Ernesto Igel picked up a bargain in liquefied petroleum gas 23 years ago, and began selling it to Brazilian housewives. His son, Pery—now head of the company—helped lead the venture from LPG to stoves and water heaters, then on to a booming cash and credit business in refrigerators, television sets, and other appliances.

Today Pery Igel's Cia. Ultragaz S.A. supplies bottled gas (cover photo) to almost 700,000 customers—about 40% of the Brazilian market. Its affiliate, Ultralar, runs 47 appliance stores. Together with other affiliates, the Igel enterprises do an annual business of $25.5-million, employ 5,000 men and women and are creating new patterns in consumer service and management science.

• **How It Began**—This varied but closely integrated fuel and appliance business got started in the mid-1930's, when 150 tons of German LPG were disposed of in Brazil as an aftermath of the Hindenburg zeppelin disaster and the suspension of zeppelin service between Brazil and Germany. Ernesto Igel, a stove manufacturer who had emigrated from Austria, bought the gas, set up a small company, and began peddling it from door to door.

But after six months he had only 19 customers, and he knew that he could expand further only if he could assure consumers of a steady supply after his German LPG was exhausted. He did this by a contract with Shell Oil Co. He also tightened up on safety precautions, to give Brazilian families added peace of mind in having LPG cylinders in their homes.

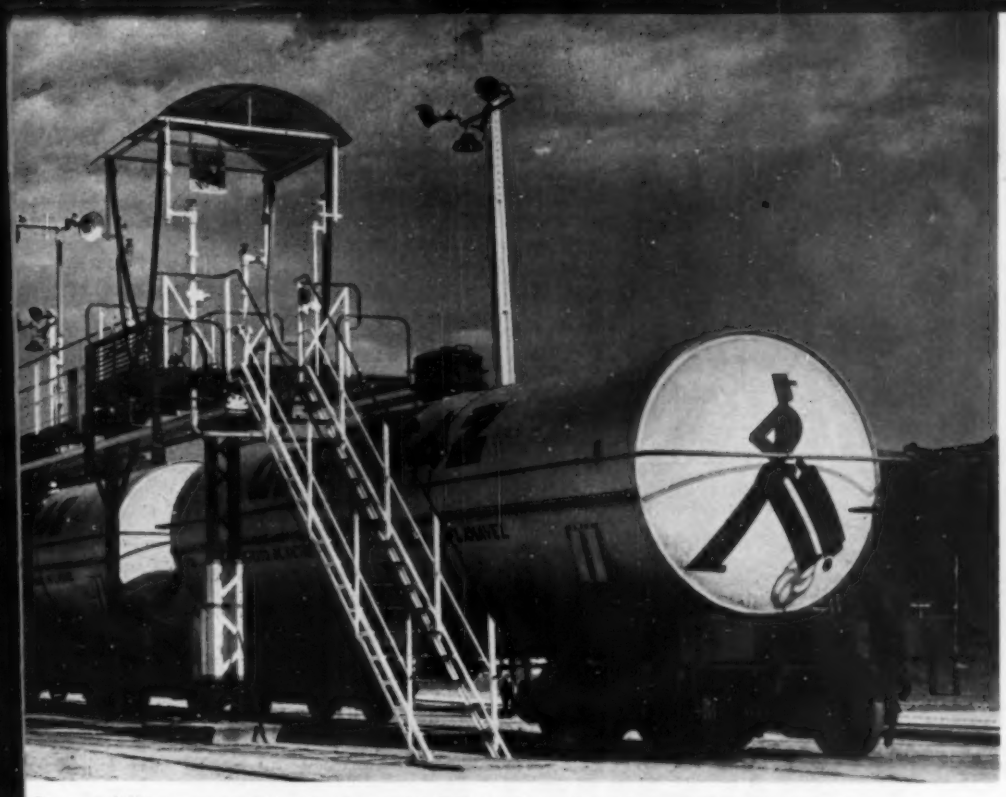
By 1948 Igel had 20,000 customers, but Brazil's economy was surging forward at a rate that meant greatly expanded opportunities. Igel's needs: bulk transportation for imports, handling technology, added capital. He found all of these in a deal with Socony Mobil Oil Co. whereby the U. S. firm gave Igel what he needed in exchange for 49% of Ultragaz.

Ultragaz thrived under the partnership. By the end of 1951 it had quadrupled its business—to 84,000 accounts—and it began adding about that number of customers each year. Brazilian production of LPG increased, and in 1954 Igel bought out Socony Mobil and regained complete control of Ultragaz. Today he gets 70% of the LPG from Brazilian refineries.

• **On to Merchandising**—As the gas business prospered, Ernesto Igel turned to improving the equipment—stoves and water heaters—that burned his fuel. He bought up German patents for stoves, opened retail outlets, and made sure that Ultragaz personnel installed and serviced all equipment.

Pery Igel, who joined his father's company in 1947, has played a key role in moving Ultragaz into new product lines. In 1957, he and his father saw the opportunities of selling other appliances, after they had a string of stores in Brazilian cities—and the goodwill and credit rating of more than half a million customers.

The Igels organized the subsidiary Ultralar to sell stoves and



by peddling a small surplus of LPG to Brazilian housewives 23 years ago . . .

Hard Goods

a variety of other appliances. In its first year, 1957, the new company did a business of $7-million, about 81% of it in stove sales. Gross sales were up to $11.4-million last year, with only 59% of it in stoves.

• **Son Takes Command** — Since his father's recent retirement, Pery Igel runs the entire Ultra group of 11 companies. Besides the two operating companies, Ultragaz and Ultralar, he heads organizations for engineering and service, real estate, advertising, and air transport. At the top is a family holding company, and beneath this, an administering company—Ultra Administracao Ltda. —set up by Pery to get the advantages of committee management.

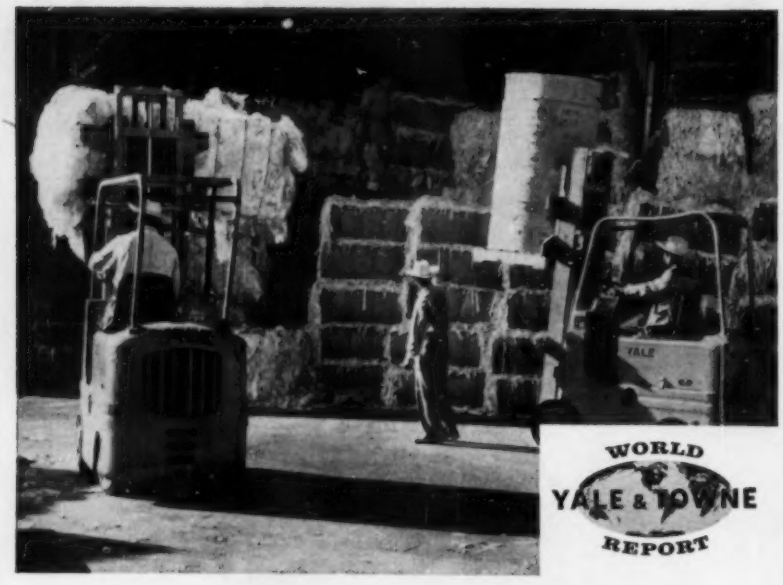
Administracao is basically an executive council consisting of Pery, his top advisors, and the chief executives of other Ultra companies. This company forms top-level policy, and is charged with overall planning and financial control of Ultra companies.

Pery Igel, a heavy-built man

(*turn to page* 18)

. . built a reputation on service, safety, regular delivery . .

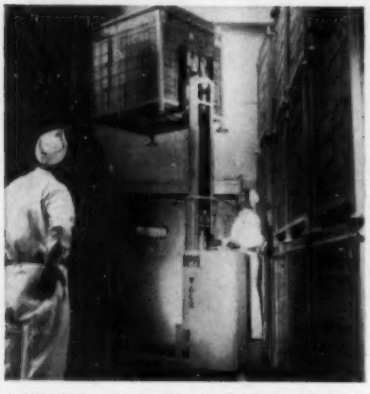
. . then turned to selling stoves and appliances on credit.



WORLD YALE & TOWNE REPORT

YALE TRUCKS SPEED HANDLING, CUT COSTS COMING AND GOING

SANTA CLARA, MEXICO—One Yale petrol truck speeds raw pulp into this paper plant, another speeds finished paper to market. Operations are performed at great saving in cost, time, space and labour. These lowered production costs take place in all types of industry using Yale Industrial Lift Trucks. Capacities of Yale petrol trucks range from 2,000 to 20,000 lbs.



NARROW AISLE TRUCK SHOWS AGILITY IN HANDLING STORAGE CONTAINERS

ENGLAND—Special containers of chocolates are stacked in rows 3 high by this straddle type Yale Warehouser. These Yale narrow aisle trucks maneuver with ease in areas only 6′ wide. They permit the greatest possible use of floor and air space. They handle loads of 2,000, 3,000 and 4,000 lbs. with unusual speed and the economy of electric truck operation. Complete Yale Warehouser line includes fork, platform, pallet and tractor models.

LIGHT, COMPACT YALE LIFT TRUCKS HELP TO SPEED WORLD SHIPMENTS

BERGEN, NORWAY—The compactness, speed and maneuverability of Yale Worksavers assure you of faster turnaround. Exceptionally lightweight, these Yale electric trucks are ideal for use in crowded areas, narrow aisles and low-load floors. Yet they carry up to 7,500 lbs. efficiently and economically.

- Yale makes the world's most complete line of Petrol, LP-Gas, Electric and Hand Lift Trucks.
- All Yale Industrial Lift Trucks are uniformly high in quality, wherever manufactured.
- All Yale equipment available in currencies of the free world.
- For further information contact your Yale Sales and Service Representative—located in principal cities of the world.

YALE®
INDUSTRIAL LIFT TRUCKS
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YALE & TOWNE

The Yale & Towne Manufacturing Company, Chrysler Building, New York, U.S.A.
Manufacturing Plants: Velbert Rhld., Germany • Wednesfield Staffs., England • Phila., Pa., U.S.A.
Licensed Manufacturer: FENWICK—Saint-Ouen, Seine, France • Milan, Italy • Barcelona, Spain

"When he isn't at his desk . . . Pery is flying"

Article starts on p16

of 37, believes strongly in committee management. "In committee meetings we take a vote on important decisions," he says "and I try to be a moderator and not a dictator."

Pery expects to see this type of collective policy-making come to more Brazilian companies, but he believes the change must be gradual. Most Brazilian lower-echelon executives, he says, are used to getting all their orders from a single top man.

Though he plays down his own achievements, Pery has been the driving force behind Ultra's recent expansion, its modern sales methods, consumer service, labor relations, as well as management innovations.

• **Pilot Turned Businessman**—When he isn't at his desk in Sao Paulo, Pery is flying. A skilled pilot—and a former member of the Brazilian Air Force—Pery uses a plane the way most people use a car. He flies to stores in the interior, to conferences in Rio, to a favorite sea-food restaurant on the coast for a business lunch. His associates have taken to the practice, and Ultragaz probably does more executive flying than any other company in Brazil.

Pery divides his time between Ultragaz's gas handling operations, and the trucking, sales and servicing activity of Ultralar. The separation of the two operating companies is in line with Brazil's complex price structure for LPG. If appliances sales were lumped with those from LPG, the Government would have to adjust gas prices downward, in keeping with the profit rate it permits for LPG distribution.

Besides selling and servicing appliances, Ultralar operates a fleet of 600 trucks and takes care of gas home delivery under a contract with Ultragaz. A key factor in the company's growth is the system it calls "automatic delivery", under which trucks call on each customer every fifteen days, whether gas is needed or not.

The cost of the system is minimized by setting up zones accord-

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At largest gypsum mine in France

Michigan Tractor Shovel reduces rock loading costs

Use of a 1¼ cubic yard capacity Michigan Tractor Shovel, latest step in 13 years of post-war modernization, has produced major cost savings in France's largest gypsum mine.

For most of the mine's 100 years of operations, the gypsum rock—raw material in the manufacture of plaster—was hand-loaded into push-carts. Later, railroads, swing shovels, and crawler-tractors were used. Finally, today, the work is being done by the fastest, most mobile machines of all—the rubber-tired Michigan and a fleet of shuttle-trucks. Owners, Societe des Platrieres de 1 Est et du Nord Reunies, point out the following Michigan economies:

1 Its speed of loading the shot rock (a 10-ton truck every 2½ to 3 minutes) has increased production.

2 Its speed of self-powered transport (26 mph) has greatly reduced waste time in moving from extraction chamber to extraction chamber throughout the big (15 acre) mine.

3 Its low-pressure rubber tires, rolling *over* the rocky footing instead of grinding *in* it, have eliminated crawler-track maintenance and substantially reduced total repair costs.

"There are still men at the bottom of our quarry," says Mr. Jallot, manager of the operations. "But today 35 workers do more than the hundreds of hand laborers formerly did."

If *you* load rock, Michigan Tractor Shovels can give you the same advantages of mobility, speed, and lower maintenance. There is a size to fit your needs: 6 cubic *foot* bucket capacity to 6 cubic *yards*. See your local Michigan Distributor for all the facts, or write:

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ing to the concentration of business. Drivers know that they will only make actual deliveries at half of their stops, and load their trucks accordingly.

• **Aggressive Promotion** — The system gives a customer assurance that he will never run out of fuel. It also is used by Ultralar to promote sales of its appliances. Drivers hand customers attractive pamphlets describing special limited offers—and this promotion has yielded a large percentage of actual sales.

When a customer has almost finished paying for a stove—and about 80% of stoves are sold on credit—he is immediately introduced to the advantages of buying a refrigerator, a steel cabinet, a television set. He receives a letter thanking him for his prompt payments, and pointing out how another appliance can be bought by similar payments.

The Ultra group's merchandising program is constantly harrassed by Brazil's inflation, reflected in the rising wholesale prices it must pay for appliances and supplies. The company has to watch its cash position carefully. When its position is weak, consumers' down payments must be increased and terms shortened.

The company's ability to finance appliance sales is helped by the fact that LPG is sold on a cash basis, collected by the deliveryman. Including its down payments and appliance cash sales, the company gets 75% of its income in cash.

• **Employee Cooperation** — Pery Igel credits part of his company's success to "the splendid friendly and loyal cooperation that my father got from employees for so many years." He maintains that relationship—by a company-wide incentive program, a fund for employee loans, a plan for helping employees buy their own homes, complete medical and dental services.

Pery is aware that some of his programs run counter to his thoughts on non-paternalistic, committee-type management. His answer: changes will come slowly. "Brazilians find it much easier to be loyal and responsible to a person or family than to a corporation," he says. ●

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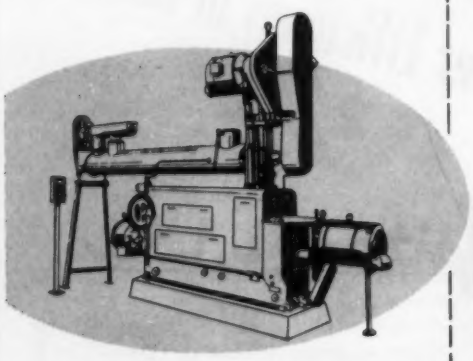

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LOOKING AHEAD — Technology

Swiss Store Gives Automated Service

A department store in Zurich is offering its customers 24-hour shopping service by means of a giant vending machine with over 400 compartments. The installation is stored on an elevating platform in the basement, then lifted into position at the main entrance after regular shopping hours. By inserting the proper number of coins, a shopper can get needed items that he may have forgotten during the day—cigarettes, packaged chocolates, ready-to-serve foodstuffs, toiletries, hosiery, shirts, and electrical supplies. Two coin changers are available, and the area near the machines is heated for customers' convenience. (Modern Packaging, July, p70)

Fuel Supply Gaged by Weather Predictions

A big U.S. petroleum company is estimating its market for heating fuel six months ahead of time by long-range weather forecasting. In April, 1958, weather expert Dr. Irving P. Krick gave the company a set of monthly predictions covering the 1958-59 winter for 18 U.S. marketing areas. The predictions were highly accurate, and they enabled the company to ship adequate fuel supplies to market ahead of an unusual cold wave last December. Predictions for the coming heating season were submitted last March. Krick, who bases his methods on a 20-year study of the earth's weather, soon will move his technical headquarters from the U.S. to Zurich for coordination with European scientists. (Petroleum Week, June 26, p46)

Increasing Yield of Cotton Plants

American chemists are increasing the yield of cotton plants by chemically inducing sterility in one of a pair of varieties of cotton planted near each other. One variety is treated prior to flowering with a chlorinated compound, under a patented process developed by Rohm & Haas Co. The treated variety, unable to fertilize itself, is pollinated by the untreated plants, producing superior hybrids for seed. (Chemical Week, June 27, p 68)

Banks Turn to Automation

Machines that read and automatically sort checks are to be displayed later this month at The Business Equipment Exposition, Washington, D. C. Some U.S. banks will put them to use next year, according to the Office Equipment Manufacturers Institute. A series of numbers in magnetic ink at the bottom of the check will guide the machine in selecting the bank's location, its identity, and the customers account number.

Rocket Travels Over Land

Travel at close to 13 kilometers per second may be possible in a rocket-type vehicle (shown at left in 1/20 scale model) developed by Japanese aeronautical expert Dr. Kyunojo Ozawa. Powered by turbo-jet engines, the vehicle would glide across country through top and bottom rollers spaced at close intervals. Tests indicate such a rocket-car will go over hills and around curves. Dr. Ozawa plans to build one 210 meters long, for 1,000 passengers. (Product Engineering, June 29, p26)

Car Designers Turn to Plastics

THE SEASON of the automotive salons is just beginning. And any visitor to the coming U.S. and European auto shows will, with a little careful peering, see signs of a signal trend in design: the rapid infiltration of plastics into almost every corner of the car.

Plastics appear in dozens of hidden uses—in hose linings, gaskets, spring liners, the gears and bushings of accessories. And they are appearing more and more where all can see—in windows and lenses, as well as for seat coverings, inside panels, knobs, handles, steering wheels, body work.

A major incentive to the designer is larger availability of new, tough, and rigid thermoplastics—improved nylons, polyolefins, acetals—that now offer properties often comparable to those of metals. Also, plastic-part design and manufacture is improving. There are new processes available for forming plastics to the closest specifications.

PLASTICS go into cars of many nations. Center, nylon-11 radiator fan, for Citroen. Clockwise from top left: ABS molding, Fiat; polyethylene tank, Saab; linear polyethylene battery, Datsun; nylon-11 ventilator grill, Citroen; urethane block and latch, Mercedes-Benz; phenolic molding and bushing, Hillman.

But just where will this trend lead? Is the all-plastic, mass-produced car on its way? Will plastics, in the next few years, supply a major proportion of the materials going into autos?

• Misgivings in Detroit — Plastics enthusiasts say that all signs point in this direction. But automobile designers, in both the U.S.A. and Europe, put up a hand of caution: First, there must be much more progress in plastics chemistry and engineering. There will be a definite ceiling on plastics usage, says one leading Detroit designer, until we have far better molding techniques as well as automatic processes that can turn out major components — rapidly — in accordance with the price and quality demands of the automotive industry.

Though they have doubled their use of plastics in the last five years, U.S. automakers have not been moving at as fast a pace as their European counterparts. *Product Engineering* found, in a recent world survey, that the average U.S. car today uses only about 9 kilograms of plastics, compared to the 20 kilograms that would go into a Volkswagen of equal size. What follows are the further results of that inquiry.

• British Innovations — Britain has not moved as fast as the Continent in specifying plastics for mass-produced cars, but it has made pioneering innovations in plastics-body design. More than a year ago Berkeley Coachworks Ltd. (IMD, Jan. '58, p 51) unveiled a sports car made of three polyester sections. An increasing number of reinforced-plastics bodies—using no structural parts—now are making their appearance.

The latest of these is the Peerless GT, a four-passenger sports coupe made of 57 separate plastics moldings. It has, among other things, a fiber-reinforced polyester bumper that looks like anodized aluminum.

Urethane foams have been replacing foam rubber in British seat cushioning. Austin Motor Co. is working on a one-piece molded seat that consists of a polyethylene shell filled with foam-in-place polyester urethane.

Other British developments include:

—Automated "dough molding" techniques that give close viscosity control of resins and catalysts, providing quality parts that can be used at high production rates.

—Use of newer, rigid, high-melting thermoplastics that mold faster and color easier than traditional phenolics.

—Placing of reinforced-plastic parts on metal bodies; by 1965, this technique is expected to be used on trunk lids, hoods, fenders, and gearbox casings.

• French Mass Production — Plastics are going into both the low-priced and luxury mass-produced cars of France. The luxury cars lean toward nylons; the economy cars, toward lower-cost materials.

The fashionable Citroen DS-19, for example, uses about 45 meters of nylon tubing for its fuel and hydraulic lines, an 8-bladed nylon radiator fan, plus complex dashboard moldings made of Rilsan (nylon-11).

The lower-priced Simca, on the other hand, has settled for polyvinylchloride (PVC). This versatile plastic now is being used for fuel lines, headlight and grille gas-

kets, windshield washer tanks, and all interior covering except the flooring. Nylon turns up only in speedometer gearing.

Renault has increased its use of plastics 47% since 1957, and is using nylon liberally. It goes into door handles, air and oil filters, heater shutters, and accelerator linkage parts.

• **Variety in Italy**—Italian automakers are using more different kinds of plastics than others. Ten basic types are used for the 29 automotive parts that now go into the Fiat 500. Cast urethane rubber is in common use in Italian cars, and polypropylene is being tested for molded carburetors, distributor caps, radiator fans, and shock absorbers.

Though they are making much progress, Italian designers would welcome a greater effort on the part of plastics manufacturers. The auto men complain of their own excessive research and development expenses, and the high cost of experimental dies—and look to material suppliers for help.

They want plastics that are more capable of resisting weather and sunlight, and that will safely withstand temperatures of at least 80 C. Italian automakers have been following foreign plastics developments closely, and they say they will not hesitate at importing U. S. or German materials when local plastics do not do the job.

• **German Demands** — Like the Italians, German auto designers are impatiently demanding improved materials from their plastics industry. They want low-cost plastics with these features:

—Greater resistance to high temperatures.

—Increased mechanical strength from below zero to over 70 C.

—Thermal expansion coefficients comparable to metals.

—Improved resistance to wear, cold flow, lubricants, and fuels.

—Lower corrosivity of plastics-metal bonds.

Plastics are playing a part in the German auto industry's current emphasis on safety. The sharp corners of sun visors, dashboards, instrument clusters, are being housed in vinyl foam padding. Phenolics are in common use—for window trims, dashboards, electrical components.

• **Plastics Car from Japan** — Within the next few months, Japan's Datsun plans to display a plastics-body car, the 4-passenger S-211 sports coupe, in the U.S.A. The event will mark another step in Japan's effort to break away from dependence on U. S. and European product engineering, and to offer unique, quality products for export.

PVC is the most widely-used plastic in Japanese cars, except where bodies are made from reinforced polyesters. Polyethylene is being used for brake fluid cylinders and battery trays, fiber-reinforced plastics for seat frames, roof liners, and doors.

Experts expect the use of plastics for cars to increase steadily in Japan, particularly in interior trim. But steel will remain dominant for many applications. Japanese designers, like those in many other countries, still are bothered by the fact that the properties of plastics are not as uniform as those for steel. (*Product Engineering, July* 6, *p*35)

Radiation Makes Soft Woods Hard

INDUSTRY is finding sensational new uses for radiation supplied by isotopes or by electron accelerators.

At first, emphasis was on using radiation in gages, tracers, radiographic inspectors. Now radiation's power to modify materials is being investigated in scores of laboratories—for food preservation, formulation of new plastics, giving new properties to old substances.

A research team of a U. S. railroad recently reported success in transforming soft woods into hard woods by chemical treatment followed by gamma radiation. The railroad's hope is to be able to use soft pine crossties, instead of the more expensive fir or oak.

The same company has been studying the effects of radiation on coal and oil. Coal broken up by gamma rays into microscopic particles has been mixed with oil and used to run a diesel engine. Researchers also have discovered that irradiated low-quality fuel oils can operate internal combustion engines as well as can conventional high-quality fuels. (*Chemical Engineering, July* 13, *p*74)

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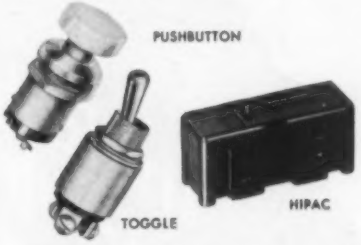

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Progress in Power Cells

Scientists are perfecting a variety of fuel cells for transport and industry.

THE FUEL CELL that generates electricity directly from a chemical reaction—without heat, waste or noise—soon may be available for commercial use.

Researchers in both the U. S. A. and Europe are making important strides in developing cells of almost any size, and in giving them added power per unit of weight. Some say that within a few years fuel cells will power radio transmitters, space vehicles, even autos.

The new power producers have far greater efficiency and versatility than batteries—a simple form of fuel cell. They have capitalized on advances in solid-state physics and an increased knowledge about the substances that speed up chemical reactions.

A fuel cell consists basically of positive and negative electrodes (anodes and cathodes), and their respective reducing and oxidizing fuels, plus an electrolyte that serves as a medium between the electrodes. Some substances serve jointly as fuel and electrode. Electricity is generated as electrons break away from the oxidant and are picked by the reductant.

Scientists already have a wide variety of effective electrodes and electrolytes. Their work now is directed toward selecting the best and cheapest fuels, and combining all the materials in the most efficient way. Here are some of the systems now being developed:

• **Hydrogen-Oxygen**—One of the most promising fuel cells uses hydrogen and oxygen as fuel, non-consumable electrodes, and a concentrated alkaline solution as electrolyte. Hydrogen is fed continuously to the anode, and oxygen to the cathode. Hydroxyl ions break away from the cathode and move across the electrolyte to react with the hydrogen at the anode, forming water and an electrical current.

Such cells, using various materials as electrodes, are being advanced in the U. S. A., Germany, Britain, and the U. S. S. R. The U. S. A.'s National Carbon Co. has turned to active porous carbon for electrodes. In Britain, the Bacon process uses porous sintered nickel electrodes, which are impregnated with lithium for increased conductivity.

• **Molten Salt Electrolyte**—Several U. S. and European laboratories are reporting success with cells using molten salt as electrolytes, and fuels that are cheap and plentiful. Air or oxygen is the oxidizing fuel; carbon monoxide, natural gas, or some other gaseous hydrocarbon, the reductant. The electrolyte often is a mixture of alkali carbonates.

Until recently these units required far higher temperatures than hydrogen-oxygen cells, and they produced less power per weight. Now these problems are being solved, and researchers say that molten salt cells of great efficiency soon will be available.

• **Consumable Electrodes** — Another highly promising fuel cell uses materials that serve both as fuel and electrodes. The anode often is an alkali or alkali-earth, and the cathode made of an active organic material combined with graphite. A liquid electrolyte is used. The anode and cathode materials are fed continuously into the cell in the form of rods.

Some American experts see wide application for consumable-electrode cells, especially in the transportation industry. The cell operates on low temperatures and has a relatively high power-weight ratio.

• **Also Under Study**—Among a variety of other cells under study is one that operates like a hydrogen-oxygen cell but uses a porous membrane rather than a liquid as an electrolyte. The membrane is fixed with groups of ionized atoms, charged either positively or negatively, that carry the particles released in the cell to their destination.

Other fuel cells being studied in U. S. laboratories employ systems that regenerate their fuels during operation. One regenerates only its reductant—a chemical intermediate that serves also as electrolyte—as it reacts with the cell's

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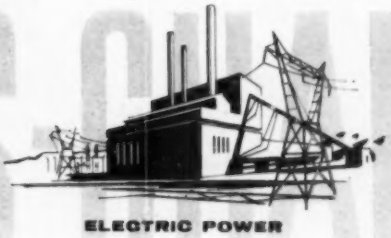
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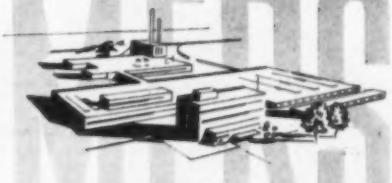
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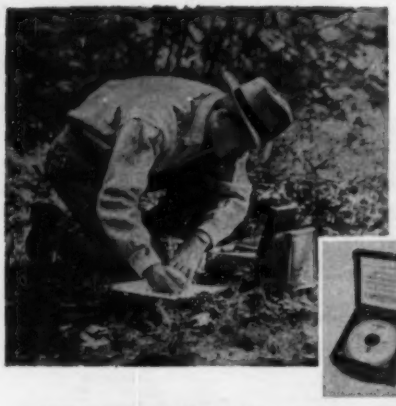

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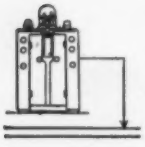

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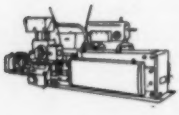

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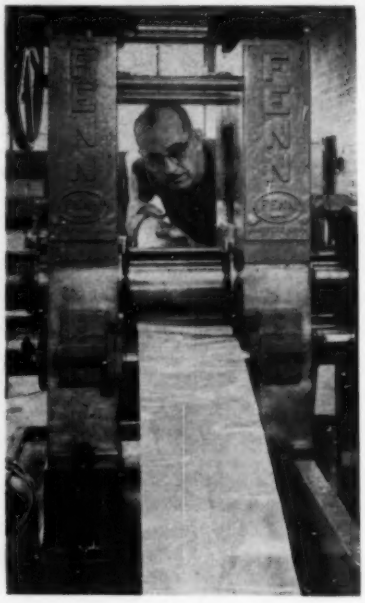
primary fuel. Another, using lithium hydroxide as an active medium, completely regenerates all fuel, but operating temperatures are too high (around 450 C) for most practical purposes. (*Business Week, June* 27, *p* 50)



Tubing Shipped As Flat Ribbon

METAL TUBING is pressed into a flat ribbon (photo above), then reinflated after shipment, by a novel process developed by U.S.A.'s Calumet & Hecla, Inc. The process offers an economical way of fabricating thin-walled tubing, and saves on shipping costs. The heating ductwork of a house can be shipped in a box, rather than as truckloads of pipe.

The new material, known as "strubing", comes in any size from a centimeter to over two meters in diameter. The tubing is formed by extrusion, then flattened in a rolling mill. This elongates the tubing by thinning the metal, but does not change the internal diameter.

After shipment, the strubing is reinflated by water pressure, air pressure, or mechanical means such as passing it over a mandrel. The manufacturers see uses for strubing in construction, electrical systems, farming, packaging, and manufacturing. (*Business Week, July* 25, *p* 75)

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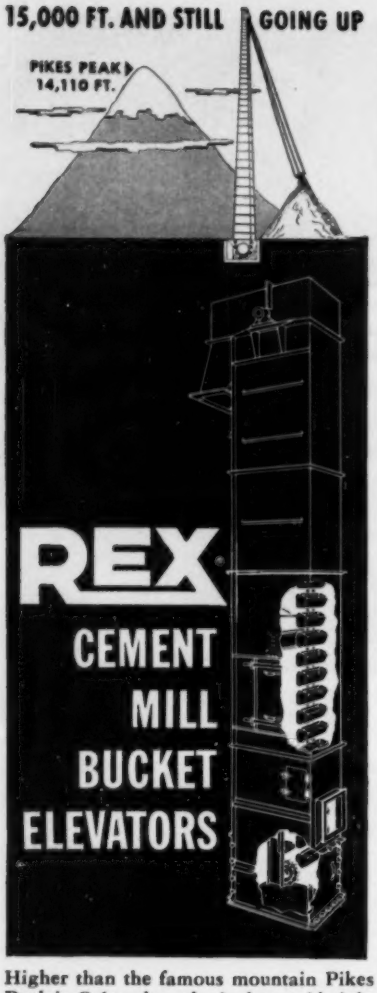

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Financial Digest

Among large U.S. investors who are more concerned with capital gains than income return, the ideas of securities analyst Samuel Lee Stedman, of Carl M. Loeb, Rhoades & Co., have won a large following on Wall Street. Stedman's specialty is picking "growth" stocks for his firm's clients.

The key, as Stedman sees it, is the compound growth of earnings. He thinks that a company must earn at least a 12% increase in earnings per share a year, compounded—that is, a doubling every six years—to be called a growth company; and for his personal definition, Stedman prefers a 15% compound—a doubling every five years.

The higher the compound rate, the higher the price-earnings ratio of a security should be. Stedman has his own formula for determining what a stock is worth, but the formula is applied only after a careful study indicates the earnings rate is likely to continue.

Suppose, for example, he locates a "growth situation" with a 25% compound—a doubling every three years. Say earnings are now $3; the price earnings ratio is around 11; current price is around $35.

Should this stock be bought?

Based on the ratio of 11 times earnings, the stock should be worth over $70 a share in 1961. But Stedman feels that such a stock should sell at over 30 times earnings. This would bring the price potential to $180 in 1961.

Stedman goes one step further. He applies a liberal discount of 12% to allow for inflation and other intangibles. Thus, in "1959 dollars," he figures the stock is worth a minimum of $53, a maximum of $153. Since both figures are well above $35, the stock rates buying.

To find his growth stocks, Stedman pays closest attention to technological developments, and to the "leisure" field, which is getting an increasing share of the consumer's dollar. Stedman also likes companies with a "sheltered" position, by virtue of products, management, geography.

There are a number of "super-growth" stocks, Stedman says, which can be bought at any time if the investor is willing to hold them for the long run. A few of the companies he puts in this category are International Business Machine, Texas Instruments, Ampex, Haloid Xerox, Ampex, Polaroid.

•

European stock exchanges are moving fast to overcome technical barriers to the listing of foreign securities. A permanent committee to foster cooperation between exchanges has been set up, with representatives from the six nations of the European Economic Community, Britain, Switzerland.

Six large West German companies have already been listed on the Paris Bourse: Siemens and AEG, both electrical equipment makers; Farbwerke Hoechst, Farben-Fabriken, and BASF, three successor companies to IG Farben; and Rheinische Stahlwerke, a steel firm. Paris has also listed five American companies: General Motors, American Telephone, General Electric, Ford Motors, and Du Pont de Nemours.

In West Germany, investors can buy into Montecatini, the Italian chemical giant. And French shares made their first breakthrough with The Banque de Paris at des Pays-Bas. Other French and Italian shares will follow.

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TRADER 15, 20, 30, 40...*4-cylinder petrol or diesel engine*

TRADER 40, 50, 70.....*6-cylinder petrol or diesel engine*

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Trailer Loads and Unloads Without Crew

Up to 18,000-kg. cargoes can be loadad and unloaded in only 60 seconds with a unique development called the Straddle Trailer. First the cargo is placed on an automatic chain conveyor and is assembled, ready for the trailer. The Straddle Trailer then backs over the load. Hydraulically-operated shoes or arms inside the trailer drop down on either side of the cargo. The arms, which expand to 1.75 meters and contract to 90 cm, encase the load and place it automatically in the center of the trailer. At its destination, the driver deposits the cargo and drives off. All is done without the assistance of a dock crew. Straddle Trailers come in 10-, 15-, and 20-ton capacities, and will handle any kind of pallet. Walking beam wheel suspension allows the trailer to ride well over very rough terrain. It can be used readily with any standard hauling unit and disconnects in less than a minute. *The Mighty Mover Corp., Straddle Trailer Div., Denver, Colorado, U.S.A.*

New EDP Unit from Britain

Ferranti's latest electronic data-processing unit, called Sirius, is believed to be one of the smallest and most economically-priced computers made in Europe (about £15,000). The computer proper (against wall), the control panel (mounted on center desk), and teleprinter (right) take up relatively little space. The whole assembly can be plugged into a normal domestic power point. It does not require air conditioning and can be moved easily from one room to another. Sirius is constructed of logical elements or "neuron packages" employing transistors. It works in decimals, each decimal digit represented by four binary digits. The manufacturer believes the major applications for the Sirius will be in statistical analysis in industrial, commercial, and scientific research, in engineering offices, and as a second unit for large organizations already using bigger computers. *Ferranti Ltd., Hollinwood, Lancs., England.*

Tiny Quartz-Cased Lamp for Industry

Although only 25 cm long, the new Quartzline lamp held on the right gives the same light as the conventional 1,500-watt bulb. The manufacturers call it the smallest, brightest, and most efficient lighting source yet developed. It is also long-lived and does not blacken. These qualities should make the lamp welcome in industry, for general high-bay plant lighting and in special applications where an intense light is needed. Because the lamp is basically an incandescent, there is no color problem as with mercury bulbs. It works on standard 110- or 277-volt current, and no supplementary equipment is needed. Quartzline lamps are available in two sizes, 500 and 1,500 watts. Final prices have not yet been announced, but the new lamp may cost two to three times as much as a standard lamp of the same wattage, although the company says it will last two to three times as long. *Intl. General Electric Co., 150 East 42nd St., New York, N. Y., U.S.A.*

WAUKESHA

Diesels

13 HP to 1235 HP NORMAL or TURBOCHARGED

All the proven features that ensure long life and the ability to withstand overloads are built into these Diesels. Crankshafts are precision balanced, rugged, and have large bearing surfaces; valve and camshaft mechanisms are carefully engineered; pistons, rings and rod assemblies are installed in matched sets; crankcases and structural elements ribbed and flanged for extra strength; combustion chambers and manifolding are a result of constant research development . . . all engineered to famous Waukesha Quality Control standards and developed by over 50 years of building heavy duty, industrial internal combustion engines.

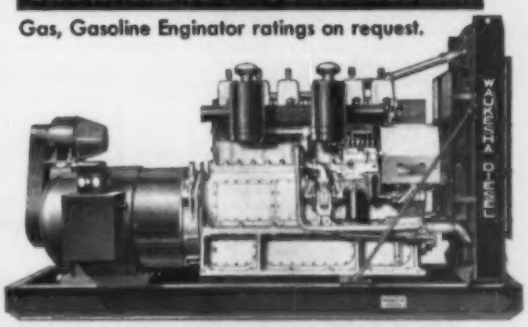
Table shows *continuous* capacity ratings—50 and 60 cycle.

Enginator Series	60 Cycle Operating Speeds, RPM					50 Cycle Operating Speeds, RPM			
	600	720	900	1200	1800	600	750	1000	1500
135	NA	NA	NA	NA 50*	60 75*	NA	NA	NA	50 62*
148	NA	NA	50 NA*	70 100*	95 150*	NA	NA	55 80*	80 125*
WAKD	NA	NA	75 120*	100 170*	120 205*	NA	NA	85 135*	115 185*
NKD	80 105*	100 125*	125 150*	150 205*	NA	80 105*	105 130*	135 175*	NA
LRD	135 200*	155 245*	185 310*	235 365*	NA	135 200*	165 255*	200 350*	NA
VLRD	270 350*	320 410*	385 515*	450 675*	NA	270 350*	330 430*	410* 575*	NA

NA = NOT AVAILABLE. Ratings are maximum KW for continuous duty at sea level at speeds indicated. Upper KW figure is for naturally aspirated. Lower figure marked * is for Turbocharged engines. Above ratings are for radiator cooled fan units. Higher ratings permissible with heat exchanger cooling. Higher ratings available for intermittent and stand-by service.

ENGINATORS • 50 TO 800 KW

Gas, Gasoline Enginator ratings on request.



Typical Waukesha Diesel Enginator—Model LRDB. All Enginators available with electrical characteristics, controls, and instrumentation for conventional or special service.

WAUKESHA MOTOR COMPANY

EXPORT DEPT., WAUKESHA, WIS., U.S.A.

WAUKESHA Power Ratings

Horsepower ratings and speeds shown herein are subject to change without notice

RATING CONDITIONS—***Engine*** ratings are for standard stripped engines without power-consuming accessories. ***Power Unit*** ratings are for complete units with standard accessories—water pump, manifold, radiator, fan and belt, and air cleaner.

Ratings are corrected to standard 29.92″ barometer and 60° F. air temperature. Deduct 3% for each 1000′ altitude above sea level and 1% for each 10° above 60° F. except from continuous duty ratings when deduction for altitude is not necessary below 3000 feet.

PERMISSIBLE SPEED—Speeds to left of dividing line are permissible for continuous service; speeds to right of line permissible for intermittent service.

HORSEPOWER—Horsepower shown is maximum. For intermittent duty, the load should not exceed 90% of the power shown. For continuous full load duty, the applied load should not exceed 80% of the power shown.

Ratings and recommended reductions are in accordance with standards of the Internal Combustion Engine Institute of which the Waukesha Motor Company is a founding member.

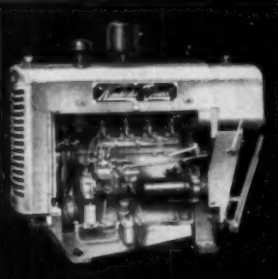
MEDIUM DIESEL ENGINES					BRAKE HORSEPOWER AT SPEEDS INDICATED										
MODEL	Features*	Bore & S.	Displ.	Torque–rpm	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
180-DLC	4-AC	3½x3¾	144	102-1800	13	18	22	27	31	35	38	42	45		
185-DLC	6-A	3½x3¾	216	152-1000	23	29	34	40	45	50	55	58	60		
190-DLC	6-A	3¾x4	265	191-1400	27	35	43	51	58	65	72	79	84		
190-DLCA	6-AC	3¾x4	265	191-1400	27	35	43	51	58	65	72	79	84	85	84
195-DLC	6-A	4 x4	302	221-1800	30	39	49	58	67	76	84	91	96		
195-DLCA	6-AC	4 x4	302	221-1800	30	39	49	58	67	76	84	91	96	98	98
197-DLC	6-AV	4 x4	302	216-1600	28	38	47	57	66	74	81	85	88	90	91
197-DLCS	6-ATV	4 x4	302	275-1800	...	...	56	70	84	95	105	115	123	128	131
135-DK	6-A	4¼x5	426	328-1600	44	58	73	87	100	113	124	133	140		
135-DKB	6-ACV	4¼x5	426	328-1600	44	58	73	87	100	113	124	133	140	144	147
135-DKBS	6-ACTV	4¼x5	426	400-1800	...	...	87	104	120	137	151	164	173	180	185
148-DK	6-AV	5¼x6	779	584-1000	88	111	132	151	169	184	197				
148-DKB	6-ACV	5¼x6	779	584-1000	88	111	132	151	169	184	197	200-2100			
148-DKBS	6-ACTV	5¼x6	779	706-1800	...	...	150	181	213	242	268	280-2100			
WAKD	6-AV	6¼x6½	1197	840-1000	126	160	189	201-1300	224						
WAKDB	6-ACV	6¼x6½	1197	845-1000	128	161	193	221	244	258	[#6 Turbo to 1200 rpm;				
WAKDBS	6-ACTV	6¼x6½	1197	1400-1200	188	200	320	318	370	400 ...	#7 Turbo 1400-1800 rpm]				
LARGE DIESEL ENGINES					600	700	800	900	1000	1100	1200				
NKDB	6-ACV	7 x8¼	1905	1372-700	156	183	209	234	258	279	297				
NKDBS	6-ACTV	7 x8¼	1905	1732-1000	158	203	245	288	330	363	390				
LRDBC	6-ACV	8½x8½	2894	2170-600	248	284	320	350	376	400	415				
LRDBCS	6-ACTV	8½x8½	2894	3580-800	...	463	545	610	645	681	695				
VLRDB	12-ACV	8½x8½	5788	4330-600	495	572	640	700	750	800	830				
VLRDBS	12-ACTV	8½x8½	5788	5440-1000	560	686	810	930	1035	1135	1235				

Ratings below for complete power units with all standard accessories: water pump; intake and exhaust manifolds, radiator, fan and belt; air cleaner.

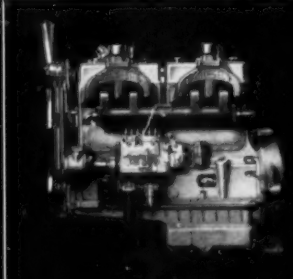
MEDIUM DIESEL POWER UNITS					BRAKE HORSEPOWER AT SPEEDS INDICATED										
MODEL	Features*	Bore & S.	Displ.	Torque–rpm	600	800	1000	1200	1400	1600	1800	2000	2200	2400	
180-DLCU	4-AC	3½x3¾	144	94-1400	...	12	17	21	25	28	31	33	34		
185-DLCU	6-A	3½x3¾	216	147-1000	...	22	28	33	38	42	46	48	50		
190-DLCU	6-A	3¾x4	265	180-1400	...	26	34	40	48	54	60	66	71	75(C)	
195-DLCU	6-A	4 x4	302	206-1600	...	29	38	46	55	63	70	76	81		
135-DKU	6-A	4¼x5	426	308-1600	...	42	55	69	82	94	106	115			
135-DKBSU	6-ACTV	4¼x5	426	379-1800	...	...	...	83	99	115	130	143	154		
148-DKU	6-AV	5¼x6	779	551-1000	...	84	105	124	141	155					
148-DKBU	6-ACV	5¼x6	779	551-1000	...	84	105	124	141	155	167	177			
148-DKBSU	6-ACTV	5¼x6	779	660-1800	...	...	...	141	171	200	226	248			
WAKDU	6-AV	6¼x6½	1197	803-1000	...	120	153	180	190-1300	205-1500					
WAKDBU	6-ACV	6¼x6½	1197	803-1000	...	120	153	180	199	209	212	[#6 Turbo to 1200;			
WAKDBSU	6-ACTV	6¼x6½	1197	1360-1200	...	182	193	311	306	352	373 ...	#7 Turbo 1400-1800]			
LARGE DIESEL POWER UNITS					600	700	800	900	1000	1100	1200				
NKDBU	6-ACV	7 x8¼	1905	1313-700	150	175	200	222	243	258	268				
NKDBSU	6-ACTV	7 x8¼	1905	1650-1000	152	196	236	276	314	342	361				
LRDBCU	6-ACV	8½x8½	2894	2100-600	240	275	310	338	361	381	390				
LRDBCSU	6-ACTV	8½x8½	2894	3500-800	...	453	533	594	623	651	655				
VLRDBU	12-ACV	8½x8½	5788	4245-600	485	560	625	681	727	773	797				
VLRDBSU	12-ACTV	8½x8½	5788	5300-900	549	672	793	909	1008	1101	1191				

***FEATURES: 4, 6, 12**—No. Cylinders; **A**—Aluminum Pistons; **C**—Counterbalanced; **T**—Turbocharged; **V**—Vibration Dampener.

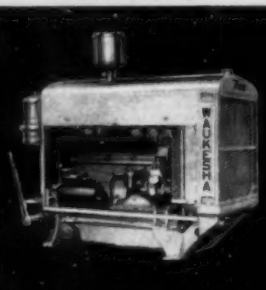
4-cyl. Utility Unit (180-DLCU) 144 cu. in. displ.



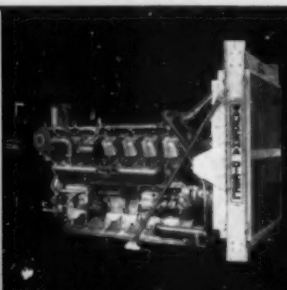
Medium 6 Non-turbo Engine (WAKDB) 1197 cu. in. displ.



Small 6 Non-turbo Unit (135-DKU) 426 cu. in. displ.



Big V-12 Turbocharged Unit (VLRDBSU) 5788 cu. in. displ.



Practical education for management—symbolized by the seminar above—has spread from the U.S.A. around the world. But now there is renewed interest in theory, as educators ask . . .

What Kind of Business Education?

- **As the need for management education becomes more critical, businessmen support a wide variety of programs and facilities.**
- **But there are problems—conflicts between theory and practice, between business and the academic world. The need for understanding is urgent.**

THIS MONTH, in Paris, the Institut European d'Administration des Affaires opens its door for the first time, offering a one-year course for those who will manage business enterprises in a fast-integrating Europe. The first class counts 75 students from 13 countries, and the Paris Chamber of Commerce, sponsor of the Institut, hopes they will help set the pattern for the successful European Management Man of the 1960s.

Elsewhere — at Lausanne and Lille, Bombay and Bologna, at the "two Cambridges" (Massachusetts and England) and many other cities—the weeks ahead will see a vast army of executives and students settling down to study management.

• **Variety**—The variety of facilities and programs is endless. There are seminars for top executives on what Aristotle means to the modern world. There are intensive programs to try to "de-specialize" narrow specialists. There are individual, one-time courses in personnel relations, retail store accounting, Operations Research—as well as full-scale academic programs in business administration. These myriad efforts are sponsored not only by universities but by private companies, management associations, Chambers of Commerce, philanthropic foundations, governments, and productivity agencies.

I. The New Look

"There is such a need for management education," a distinguished American educator said recently, "that there is room for every kind of facility."

Why? Because better understanding of modern industrial organization is utterly crucial—for industrial countries as well as less-developed lands trying to industrialize . . . because management is becoming recognized as a skill, not a God-given right or an inheritance, and it can—and must—be learned.

Time and again, men who best understand the process of economic growth say that good managers are far more essential to success than natural resources, machines, markets, even capital.

Forward-looking businessmen accepted this challenge; and through their interest, management training facilities have multiplied.

Not surprisingly, they looked to the United States for inspiration and help. Almost without exception, the new management education centers have been set up with the help of U.S. university professors, U.S. government assistance, and the funds of private philanthropic foundations. And embracing the practical methods of the Americans, the training centers shy away from theory, concentrate on student-centered teaching. The Harvard "case method" is a prime example.

As a result, business education outside the U.S.A. has been divorced from the academic world.

The businessman-educators have become suspicious of scholarship, and scholars have ignored the problems of business.

Now there is evidence of a coming together of these divergent viewpoints. Courses in business administration are beginning to invade classrooms that were formerly reserved for lectures on the classics. But more important, U. S. business educators — who originated the practical approach—are making a determined effort to introduce more theory into management training. They are exploring the social sciences, mathematics, and other disciplines, and a flood of research is going into "a unified theory of the firm," the nature of decision-making, and other advanced concepts.

But the opportunity for rapproachement comes at a time of crisis. Many American educators are frankly worried about the new management institutes. Speaking of one now in its second year, an American professor who served as a staff member told INTERNATIONAL MANAGEMENT DIGEST: "The institute is an almost unbelievable success, but I fear for its future."

II. Fears For Future

Despite the tremendous need for "almost every type of facility and program," some educators are now taking the position that unless a management institute is set up so that it will gain acceptance for itself within the nation's own culture, it is probably better not to set it up at all. In particular, they warn that the new institutions must win the acceptance of the academic world—they cannot go on forever depending either on American professors or the services of volunteer lecturers from their own industry.

There is no substitute, they believe, for professional educators trained not only in subject matter, but in how to teach it. If these professionals are not developed—and developed fairly soon—U. S. educators fear that "textbook principle" educators will destroy all the brave new experiments.

• **Threat to Status**—Furthermore, progressive educators warn that a strong attack on the whole idea of "student-centered" education is building up. They reason that every new business school, every new institute—every successful experiment—will increase the threat to the status of the old-fashioned academic lecturers.

To be sure, not all the new institutes are in danger. Britain's Administrative Staff College at Henley, with its "syndicate method," is specifically tailored to the British temperament (IMD, June). And some of the U.S.-assisted business schools—the Ecole d'Administration des Affaires at Lille, France, for instance—have been able to put down native roots.

But, on the other hand, there has already been serious friction at the IPSOA institute in Turin, Italy, sponsored jointly by the Fiat and Olivetti companies. And some of the most widely publicized institutes have not even begun to "de-Americanize."

• **No Compromise**—One distinguished U.S. professor who has served on the staff of several of the new management institutes says that he will argue against the establishment of any more, unless there is agreement to four "points of no compromise."

—The faculty should be allowed to choose its own curriculum and methods of education, within broad guidelines set out by a governing board. The emphasis should be on educational experiments. This policy will lead to mistakes; but better to make mistakes than do no experimenting with better ways of teaching.

—To obtain good faculty members, there must be financial guarantees, and employment must be assured for at least a "decent" period of time. Compensation should be competitive with business salaries rather than with those of the academic world.

—The manager-students and faculty must work full-time. If students are allowed to work during the training period, they have a "constant opportunity to reaffirm old prejudices."

—The program must occupy enough time to give the students a chance to change some of their basic cultural reactions, and their ways of thinking. For recent university graduates, the minimum period might be around 12 weeks; for junior managers (30 to 40 years old), it might be 8 weeks.

• **Other Points**—On some other points of controversy, this professor would make no recommendations. Whether or not the institute awards a degree is a matter of "local option." The question of university affiliation is not crucial either, in his opinion.

But on this last point, another American educator told IMD, "Ideally, if a 'European-style' university is involved, the institute should be connected with the university, but not be a part of it." The seniority system, he says, would automatically put the senior economics professor in charge, and the chances are that he would be an advocate of "textbook principles" rather than student-centered education.

III. The American Concept

If the business community is going to provide the support that management education must have, businessmen must have an understanding of what, for lack of a better term, is often referred to as "American-style" management education. The crux of the matter is this: "How a subject is taught is just as important as what is taught."

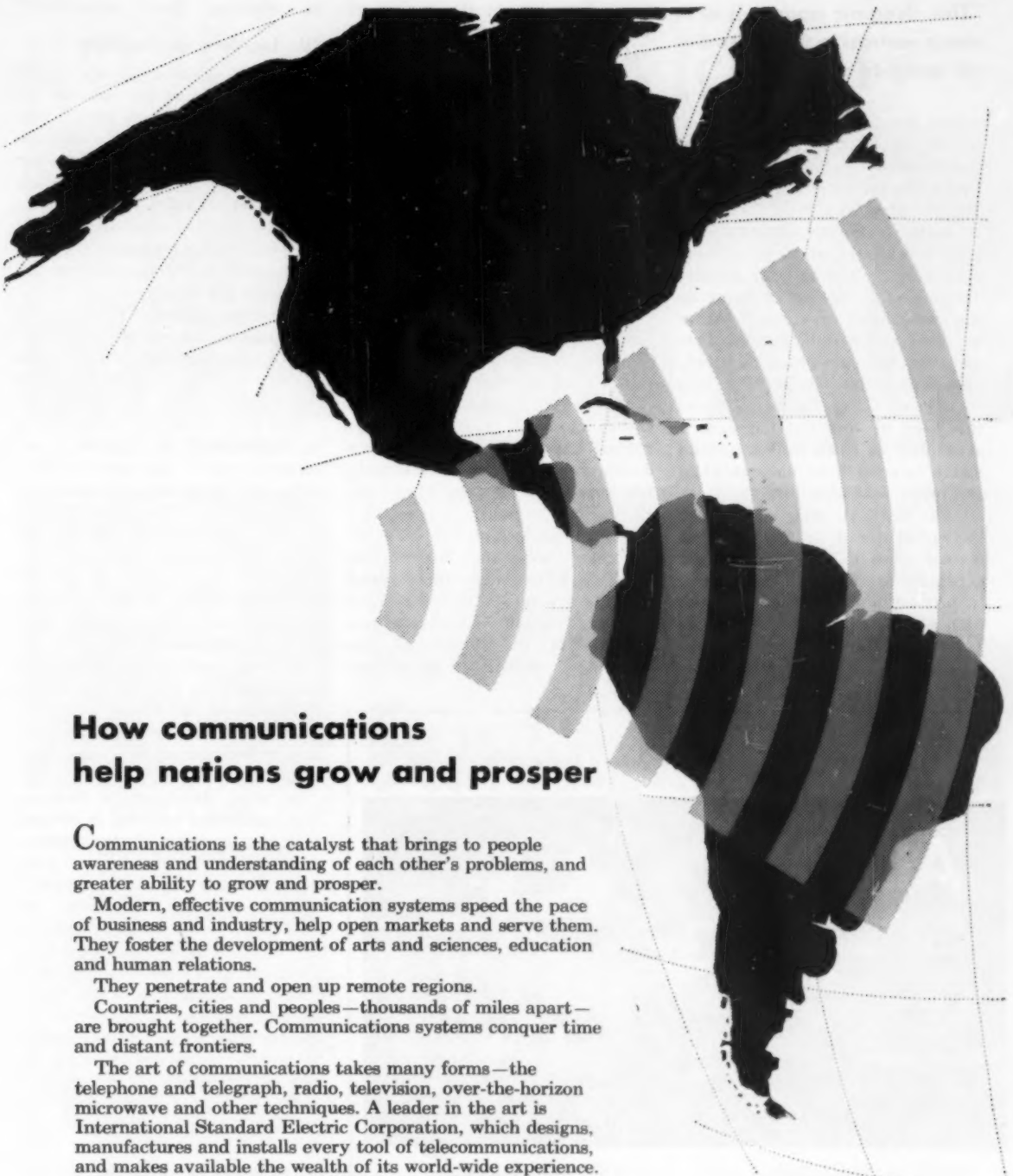
The result is what educators like to call "student-centered" teaching. It is based on the concept that the discussion group is a more effective teaching device than the familiar lecture.

According to this school of thought, personal participation is critical to the educational process. That is why there is such an emphasis on seminars, discussions.

This concept has been particularly influential in management training. Even names can be highly indicative of this influence. In Germany, for example, there is the Baden-Baden Unternehmergespraeche (literally, management "get-togethers")—the three-week seminars held by an organization that is best translated as the "German Institute for the Promotion of Up-and-Coming Managers."

Instead of "lecturers" or "guest speakers," the Baden-Baden sessions revolve around "cooperators," who deliver a very short exposition which is followed by a longer discussion period.

This dynamic approach is in sharp contrast to what has been



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"This dynamic approach is in sharp contrast to the 'after-dinner speaker' approach."

story starts page 35

called the "after-dinner speaker" approach. F. A. Heller, head of management studies at Britain's Regent Street Polytechnic, sharply attacks what he calls a "tendency to organize courses around speakers rather than speakers around a program." The famous speaker "gives one a feeling of being in the presence of greatness," Heller says, " and it may be thought that some of this greatness is likely to spread by contagion." But as a matter of fact, Heller believes this kind of organization puts a great deal of faith into a method which has not been successful in any other field of training.

• **The Case History**—Of all the student-centered techniques, the most famous is the case method technique developed by Harvard. In brief, the student is presented with a mass of information about a management or company situation, and the task is to separate the relevant from the irrelevant. Furthermore, there is no theoretical solution to the problem.

Advocates of the case method do not reject the lecture process as such. But they do reject the idea that a theoretical structure should be built before dealing with practical business problems.

"What we are trying to do," a Harvard professor explains, "is to assist the transfer of information within the mind from one problem to another." Technical and functional material—a theoretical framework—is imparted to the students, but only as the students feel a need for it.

• **Business Games**—Some educators predict that "business games" (there are now about two dozen varieties) will eventually become more widely used than the Harvard case method, and that gaming will assume the role in business schools that laboratories play in physics departments and moot courts in law schools. Like the case method, business games provide, in the words of one American educator, "experience in learning from experience."

IV. Leadership Training

Efficient learning is only one of the advantages of the seminar approach, however. More vital, it provides an opportunity for leadership training. The connection between the seminar and leadership has been effectively stated by Professor Howard W. Johnson, Director of the executive development program at the U. S. A.'s Massachusetts Institute of Technology.

• **No Stereotypes**—"There are no personality stereotypes of leadership," explains Johnson. "There are '40' different ways of being successful."

But it is extremely difficult, if not impossible, for a man to experience—or to experiment with—different leadership patterns in his company. "This is why businessmen need outside seminar experience," Johnson says.

What a manager needs, according to Johnson, is more insight into his own style of leadership, and what affects his own style. He needs to develop confidence in himself and in his own decisions. Furthermore, he needs to understand the different adjustments that are required at every level of management.

In most development courses, this leadership training is merged with the learning of management controls, marketing, human relations, and the like. In one experimental program, however, the leadership potential of the seminar is being put to a direct test.

• **Greater Insight**—For several years, the U.S.A.'s National Training Laboratories in Group Development has been putting groups of middle managers through intensive two-week "laboratories" aimed directly at giving each man greater insight into this own style of leadership. In a typical case, for instance, one manager was led to discover that his "leadership behavior" was limited to two actions: recommending and sulking. If his ideas were not accepted by others, he would withdraw into his shell. And with this insight, he easily broadened his behavior.

• **Landmark** — Beyond experiments into group dynamics by psychologists, however, there has been little real evidence to sup-

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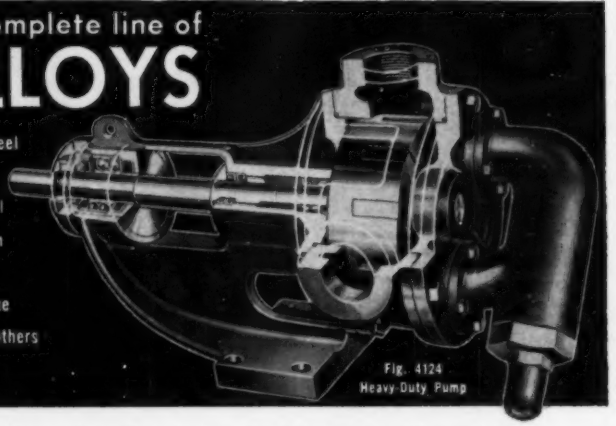

Fig. 4124
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port the enthusiasm for the seminar approach. But a real breakthrough into evaluating management education is now reported from Norway. Educators who have read advanced copies of a report soon to be published say it will become a "landmark in management education."

This study involves the students who have participated in the 12-week middle management program at Solstrand, Norway, under the direction of Professor Rolf Waaler, one of the pioneers in management training in Europe (and now Rektor of the Norges Handelshoyskole). This program is student-centered and "American-inspired," and the case method is used.

Since there was no practical way to "test" the effects of the training, the help of four sets of judges was sought to evaluate the influence of the program on the students, their companies, and their environment.

The conclusion: The training experience has had a lasting effect on the students. From their experience, the students apparently learned "new ways of looking at their problems." As one result there was a vital increase in their initiative. The training experience is credited with having "broken down their reticence and inhibitions."

Furthermore, it was judged that the students have had a definite positive influence on their companies and their environment—beginning immediately after the training course and continuing throughout their business careers.

V. Academic Trends

The institutes—and the training programs of private companies and associations—have come into being in many nations primarily because the universities have lagged in providing business education. Now more and more universities are offering courses in business education.

Cambridge is only the latest of the great universities steeped in the classical tradition to offer courses in business administration. Perhaps even more symbolic, business administration is now being offered to young Italians at the University of Bologna, the world's oldest university.

One the strongest barriers to such reforms in many countries is the authority of the national educational ministries. They oppose not only new teaching methods, but even the introduction of courses in personnel, production control, sales management, and the like. "Look at France," one observer remarks. "There was no business training at all in the state universities until Gaston Berger was appointed director general of higher education—and then the change occurred overnight."

• **U.S. Trends** — American educators are fond of saying that controversy and debate are the lifeblood of educational reform. They say, in fact, that all "reforms" should be thought of as experimental. At the present time, the U.S. business educational world is fermenting with new "experiments." And what is happening should be of vital interest to educators and businessmen everywhere.

A report to be released this fall —the "Gordon Report," financed by the Ford Foundation—will state flatly that "too many business courses are taught on the undergraduate level," and furthermore, far too many fields of specialization are offered by U.S. business schools.

While this report describes a current situation, it also describes a trend. The leading U.S. business schools are already abandoning a narrow, vocational approach. There is a stronger emphasis on the liberal arts. And curricula are being revised into broad areas such as industrial management and production, communication theory and organization behavior, and quantitative methods—replacing specific courses in "retail store accounting," "advertising copywriting," "railroad securities analysis," and the like.

• **Basic Knowledge** — But many thoughtful educators now urge future business leaders not to study business subjects on the undergraduate level at all—but to study the liberal arts, followed by postgraduate business training. On the grad-

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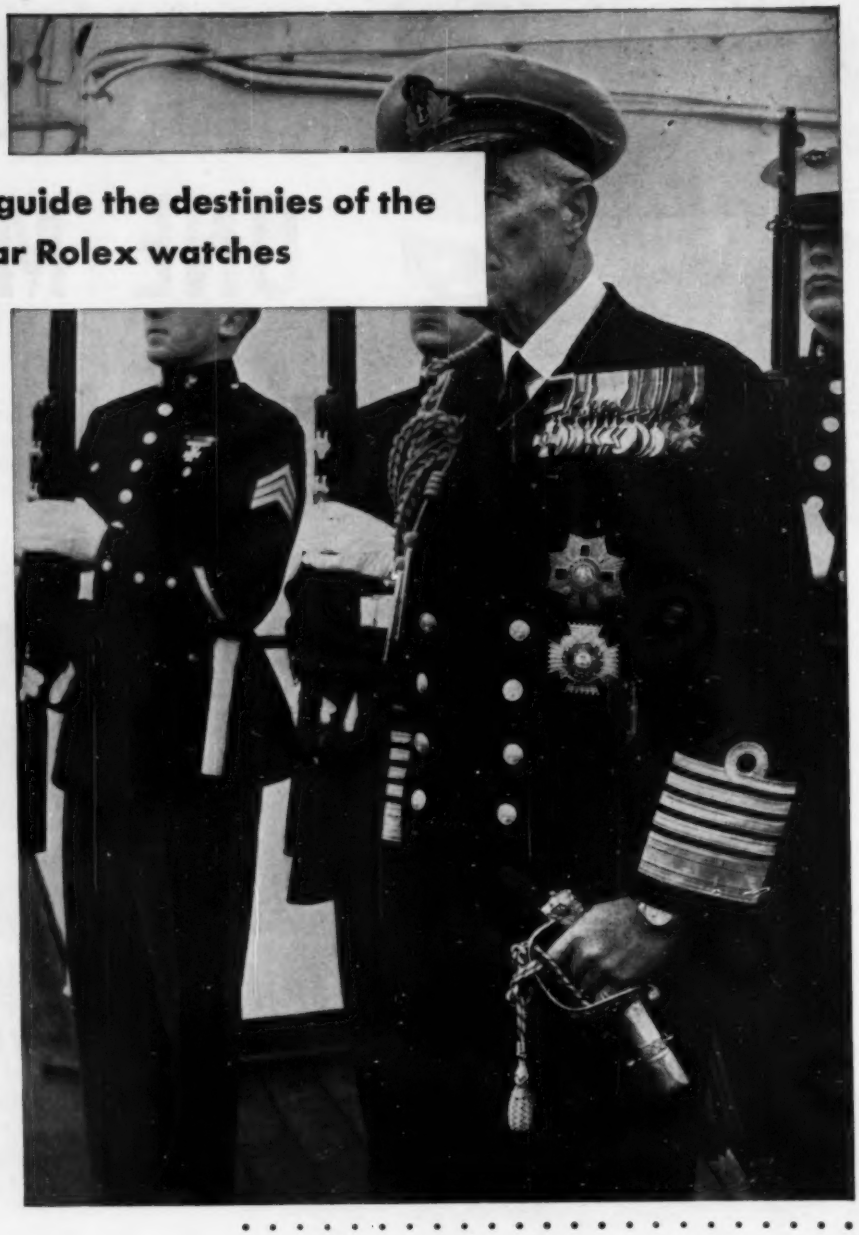

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uate level, there is a widening effort to teach business in terms of the broad fields of knowledge that underlie the practice of management. Until recently, the only basic discipline taught in business schools was economics. Now there is a belated effort to bring in the other disciplines—graduate business schools are adding psychologists, sociologists, political scientists, even engineers to their faculties. And specialized courses are being combined: At one school Quantitative Methods in Business includes statistics, budgeting, forecasting, reporting, quality control, and operations research.

Harvard University is bolstering its case history approach with a strong theoretical emphasis, especially in economic analysis, the behavioral sciences, and statistical methodology.

• **More Research** — Another major trend is an increasing interest in research. There are a growing number of seminars aimed at getting social scientists interested in business problems. Business professors are also learning more about related fields.

This month, for example, the Institute of Basic Mathematics for Application to Business will open its door in Cambridge, Massachusetts. The students will be professors of business administration —supported, like the Institute itself, by the Ford Foundation. The purpose of the Institute is not to turn all business education into operations research, but "to incorporate mathematical methods—wherever appropriate—into the functional fields of business."

• **On the Threshold**—For the future, business educators are pondering a recent statement by Thomas H. Carroll, vice president of the Ford Foundation:

"I am thoroughly convinced that we are now on the threshold of a major change in business education. The next step may well be the development of a unified theory of the firm. The need for such a theory is already recognized by leaders in the fields of quantitative controls, organization and administration. They are agreed that in the near- or 'middle-run' future there should be a new emphasis on analysis of the firm as a totality."●

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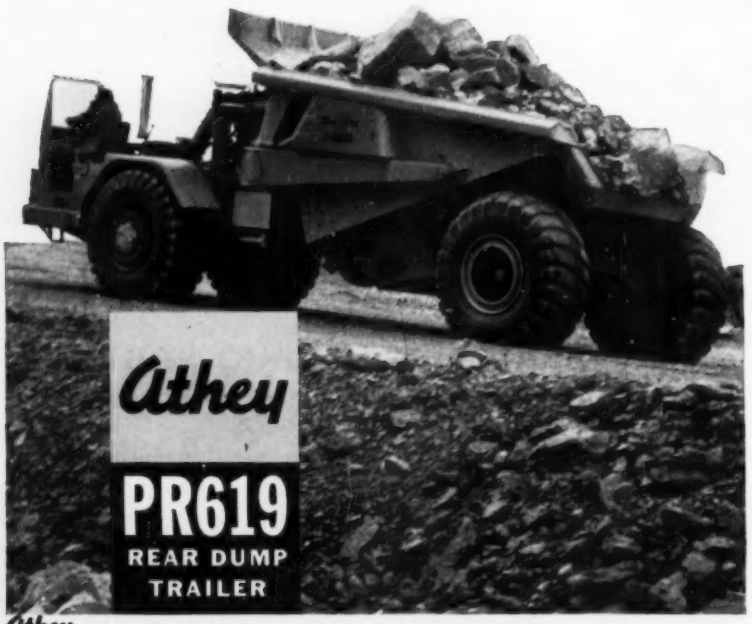

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Manpower Planning Becomes Important

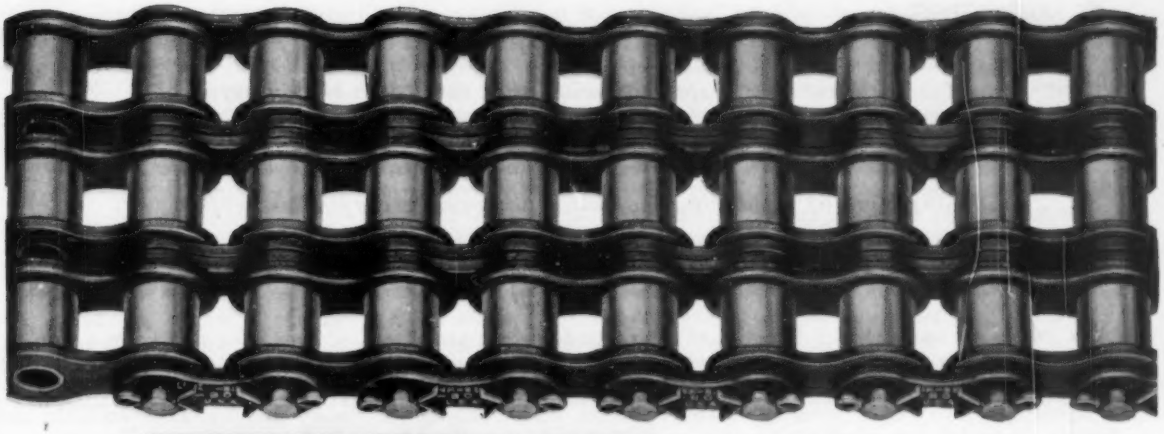
THE NON-WORKER COMPONENT of companies has increased sharply in recent years, two business researchers from Princeton University report. Their study of 50 U. S. companies for an eight-year period showed an average increase of 32% in the management component (foremen to chief executives), and a significant increase in administrative assistants, white collar workers, professional employees, and technicians.

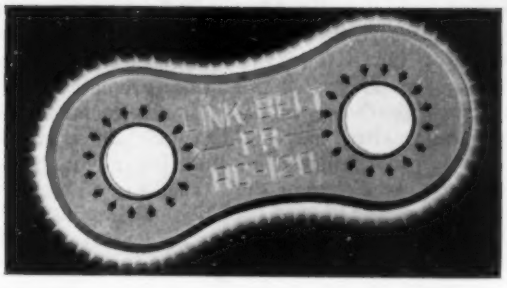
"Empire-building" by ambitious managers was probably a factor in some of the companies. But according to Dr. Frederic Harbison, head of the University's industrial relations section, other factors were much more important.

There seems to be a definite connection between a decrease in the worker component and rapid changes in productivity. In companies that had made few changes in products, methods, or organization structure, the non-worker component tended to remain unchanged or even to decline. And where the non-worker component increased, there was also an increase in productivity. Besides technological changes, the researchers say that decentralization and diversification are important factors.

• **Shock to Disbelief**—More important than the statistics, however, is the fact that few of the companies were aware that the change was taking place. When the companies were confronted with the findings, their reactions ranged from "shock to disbelief." Dr. Harbison notes that some of the companies refused to believe their own figures, and "took three months to recheck." One personnel director, in fact, admitted that he was considering withholding the findings from top management.

This would be a serious mistake, in Harbison's opinion. For if a company fails to consider future changes in its work force, it is tantamount to assuming that there will be no major innovations. "In long-range manpower planning," the report concludes, "most companies really do not know where they are or whither they are tending."●





Arrows indicate critical areas treated with compressive stresses to improve fatigue resistance.

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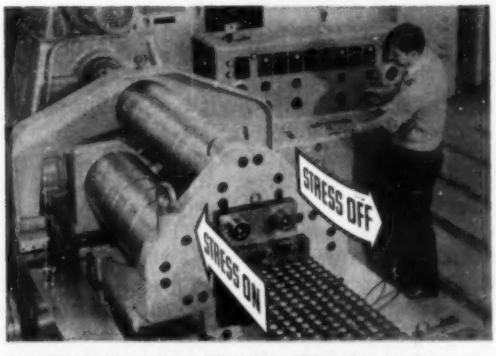

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Jobs too rugged for standard roller chains are taken in stride by Link-Belt FR roller chain. Through its patented FR process, Link-Belt gives *greater dynamic strength* to the larger sizes of chain most likely to encounter severe cyclic loading. FR greatly raises the chain's endurance limit by compressing metal around pitch holes—the critical sidebar areas most vulnerable to fatigue failure.

The FR process results from the same design and metallurgical research that has produced many more "extras", all *standard* in Link-Belt roller chains. They include shot-peened rollers, close heat-treat control, lock-type bushings and others. For further details on Link-Belt roller chains, send for Book 2657.

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". . . a corporate state of mind that insists on the integration and coordination of all the marketing functions which, in turn, are melded with all other corporate functions, for the basic objective of producing maximum long-range corporate profits."

What the Marketing Concept Means

ANY COMPANY can embrace integrated marketing. It has been done successfully by both large and small companies, and it is becoming utterly essential for survival in many industries, in many nations.

But many companies have rushed into reorganization, mergers, diversification, and the like without being fully aware of the necessary conditions and pitfalls attached to "total marketing."

To encourage the serious thinking that is needed, a U. S. marketing executive, Arthur P. Felton of American Brake Shoe Co., offers the formal definition above. To Felton, the unresolved question with most companies is not whether they are capable of integrated marketing, but whether they are willing. He explains why in the current issue of the *Harvard Business Review* (July/Aug., p55).

• **State of Mind**—Consider what happened in one company that was dominated by an autocratic president. At the insistence of its bank, this company called in a competent management consulting firm to straighten out its organization. After a thorough analysis, a new, well-designed marketing organization was set up, complete with advertising manager, product marketing managers, marketing research department, marketing administration section, and a reorganized sales force. It seemed to be the perfect solution according to the textbooks.

But one thing was missing: the proper state of mind on the part of the president. He still made all the decisions; he was still out of touch with current marketing problems. And at the end of two years the company was still functioning in the same way it had for the previous 20 years—because the marketing group was not allowed to function in a professional manner.

• **Comprehension**—The president need not be a "marketing man," of course. But top management must have sufficient comprehension of the marketing concept to establish objectives and measure the results.

Executives of industrial goods companies, in particular, often fail to understand the psychology of the distributor and retailer, the company's obligation to the consumer regarding product servicing, or the different sales personalities involved. Many a company is held back because top management is reluctant to spend enough money on advertising, sales promotion, trade deals, salesmen's compensation plans, and so forth.

Industrial goods producers do not have a monopoly on marketing myopia, however. Many producers of consumer packaged-goods suffer because they fail to understand the dynamic character of distribution channels; or they fail to realize the need for a highly professional integration of package design, trade and consumer promotions, and advertising with direct selling.

• **Organization** — There are important differences between large and small companies. In the smaller company, the marketing executive must actually perform a wider variety of marketing functions himself, and he should have an intimate connection with the daily work. Consequently, he should have experience in specific technical skills.

In the larger company, on the other hand, the top marketing man is more likely to be a coordinator, planner, and "corporate thinker." He needs special skill in administration and over-all planning. He must also have sufficient experience to direct his subordinates.

In some cases, particularly if the marketing reorganization is carried out under the direction of an executive vice president, the director of marketing may be in a staff position, with responsibility for all marketing functions except sales, sales training, sales analysis, and product services. In other words, he would be in charge of such things as marketing research, advertising, sales promotion.

• **Job Demands**—Every company should take a careful look at its particular requirements and develop a job description of its top marketing job.

In general, the marketing director needs a broader background than does a successful sales manager. He must think in terms of company policy rather than monetary or unit sales. He should have a higher degree of analytical ability than the average sales manager; for one thing, he must be able to define problems for research, and develop plans and policies based on the results.

He must be able to sit down with the production manager, the personnel director, the treasurer, the lawyer, the president, and even the board of directors and put the interests of the company first, while at the same time representing the marketing demands of the business.

The ability of the new executive to face delicate situations may well be more important to his success than his professional experience. In particular, he must be prepared to handle the resentment of unsuccessful candidates for the job—especially if he is brought in from the outside—and he must dispel the suspicion of other department heads who may fear an attack on their cherished prerogatives.

One major error that should be avoided if possible is staffing from the bottom up. Trouble can develop if a company fills all or most of its marketing jobs before it hires or appoints a director of marketing. The new chief may discover that

profitable | U. S. Urged to foreign products, the market re-

his subordinates are incompatible, or that they do not have the proper balance of ability and personality.

It can also be a mistake to slavishly follow the usually sound policy of promotion from within the company. This can be particularly dangerous when a company enters a new, fiercely competitive field.

• **Controls** — Every company should have an overall long-range plan. And for closer control, it should have an annual marketing plan, for each product or line.

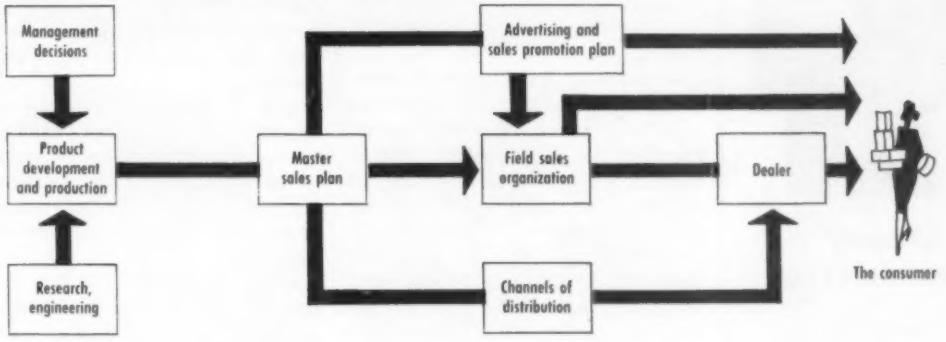
This annual plan must be based on intensive research and analysis, and be complete with forecasts. It must define marketing strategy.

The simple act of sending a copy of the monthly or quarterly reports gives top management current information. A good reporting system not only keeps management informed, but makes it unnecessary for the top executives to "breathe down the neck" of operating men.

It is possible for a company to go wrong with the best conceived marketing plans, of course. One common reason is lack of coordination between executives or no clear-cut channels of communication.

A good management control system should prevent this, but many companies have discovered it is a good idea to bring in a marketing expert to serve on the board of directors—top-flight officers or directors from noncompetitive enterprises, retired executives, business school professors, or marketing consultants. ●

The Conventional Approach...



The Marketing Approach...

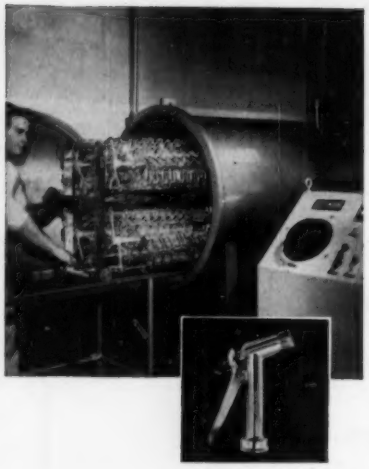
The Marketing Concept: How a Swiss Sees It

"The actual act of selling is only the final step in the effort to sell," says Dr. Rudolf Farner, owner of the Zurich advertising agency that bears his name. At the recent conference of the International Advertising Association in Vienna, Farner illustrated his view with the two "flow-charts" above.

To Farner, the marketing approach demands that the marketing man have a place right at the start of the production process, not at the end. This executive must be armed with information that will show the management, the engineer-designer, and the producer what the consumer wants, what he is willing to pay. Farner stresses, as does Arthur Felton (see facing page), that the marketing man must be much more than a sales manager.

Not surprisingly, the Swiss advertising executive also emphasizes the role of the advertising agency. Besides having a direct responsibility for market research and the advertising-promotion plan, Farner believes the agency should cooperate with company management every step of the way—from helping to draw up overall marketing goals through "success control," the task of maintaining markets as consumers and their tastes change with the times.

profitable vacuum coating



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U.S. Urged to "Buy at Home"

But the latest survey of consumer opinion indicates slim chance of success.

"BUY AMERICAN" ADVERTISING, aimed at reducing consumer acceptance of imported products, has been launched by a number of U. S. companies, reports *The Wall Street Journal:*

—"Ameripak," a new brand introduced by a California fish cannery, effectively suggests discrimination.

—"Built by American craftsmen, using components from American suppliers," advertises a radio manufacturer in a two-edged attack against competitors who import component parts as well as against imported radios.

—"The hues in shoes are more beautiful in American leathers," greeted visitors to the trade exhibition of The Tanners' Council last month.

—"Let's Go American," exhorts a booklet issued by 14 U. S. steamship lines.

Similar themes have been adopted by watch companies, textile manufacturers, and optical concerns. Reportedly, a steel company plans a sales campaign "wrapped in patriotism" if currently high imports of nails and wire hold up after the end of the current steel strike. (See article, page 12)

• **Chances of Success**—Will "buy American" advertising succeed in its mission? The chances of real success appear slim.

Sentiment in Washington is for more liberal trade—despite the much publicized exceptions. And a growing number of American companies are themselves becoming identified with imported products—including products made in their own overseas factories.

But the real answer to the question is in the hands of the American consumer. How does the American "man on the street" now feel about imported products?

• **Open-Door Sentiment**—In the most recent consumer-opinion survey concerned with attitudes toward foreign products, the market researcher concluded: "Old American protectionist attitudes are shifting rapidly in the direction of free trade."

This shift in sentiment is not without exception, Researcher Daniel Yankelovich told *Printers' Ink* magazine, but "closed-door" sentiment remains strong only toward Communist-bloc countries.

The American public has not been convinced by the argument that buying imported goods somehow tends to lower their standard of living. But there is some "worrying concern" that imported products can harm certain American industries. And undoubtedly the strongest campaigns to "buy American" are underwritten by these industries.

Still, Yankelovich found a strong element of self-interest behind the consumers' attitudes. There seems to be widespread agreement that "importing all kinds of products keeps American manufacturers on their toes."

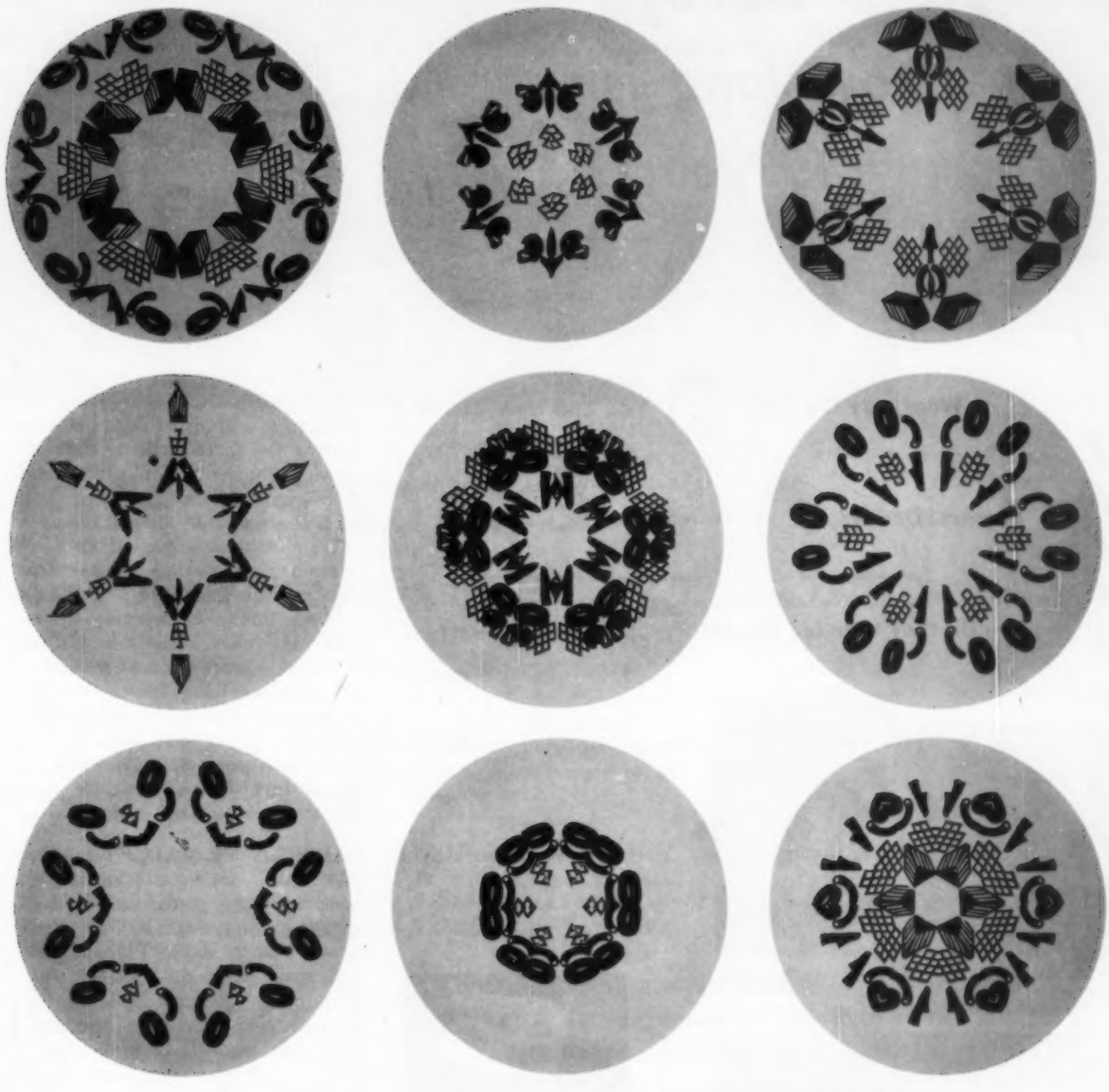
• **Exploitable Principles**—Yankelovich says he found two general principles working to improve consumer attitudes toward foreign-made goods. First, consumers get a chance to buy quality goods at lower prices, and products that are somewhat different from domestic products.

He warns, however, that American consumers do not regard a product as a good buy—a "bargain"—solely because the price is low. Except for a few products, such as cheap toys, imported goods must also meet minimum quality and feature requirements.

The second principle favoring imported goods is *cachet*—the indefinable quality that turns a foreign-made product into a status symbol. Not all products have *cachet*, of course, but the ones that do enhance the quality of all products from the same nation. Conversely, a poor-quality product can achieve the opposite result.

If properly exploited, the *cachet* principle can be one of the most effective tools in maintaining the American consumers' interest in foreign-made goods. But, warns Yankelovich, "only by removing negative influences can the *cachet* items accomplish their upgrading effect."●

FASCINATING



...like the uses for Polysar* rubbers

Applications for Polysar synthetic rubber are as varied and numerous as the shifting patterns in a kaleidoscope. New types of Polysar are continually being added to the range of synthetic rubbers produced by Polymer Corporation Limited. Each of them helps to create new rubber products or improve existing ones.

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In Marketing

ADVERTISING PAYMENT system—the traditional 15% commission on space billings—will have to change. This is the prediction of over 400 U. S. advertiser and advertising agency executives surveyed by *Printers' Ink* magazine.

The reason: Rising advertising costs and advertisers' demand for more services are squeezing agencies' profits; and increased business has not brought much relief.

Yet most executives and agencies like the system. Consequently, changes are expected to be toward combinations of fee and commission.

MERCHANDISE that sells best during a recession continues to gain in sales after the recovery, according to a study of sales patterns during the three postwar U. S. recessions by the National Industrial Conference Board. Long-term growth patterns are thus often more clearly apparent during a recession than during normal economic times (page 9).

Such things as sporting goods, cameras, toilet articles and drug sundries, silverware, and jewelry—all considered as "discretionary" goods that people do not have to buy—showed strong sales gains during the U. S. economic downturns. Home furnishings, furniture, and major appliances suffered.

CARTEL-TYPE MARKET for Europe's auto makers is predicted by some industry executives. A Fiat executive, quoted by *The Wall Street Journal*, says. "Perhaps Fiat will make only the smallest car, with maybe Renault building the next size and Volkswagen the next. That way we will all have a substantial market without having to make many different sizes and without fighting each other."

AUSTRALIA'S Utrilon Industries Corp., now only two years old, is building a world-wide sales empire with an all-plastic sports shoe that is made in one molding operation—15 seconds to the shoe. Utrilon already has plants in England, France, South Africa, and the U.S.A. Next year, the company expects to sell 20-million pairs in the U. S. alone.

42 "EUCS"

on Power Projects in FINLAND

REAR-DUMP EUCLIDS of 15 and 22-ton payload capacity have proved their dependable, cost cutting performance on several big power projects on the Oulu and Kemi Rivers in Finland near the Arctic Circle. They've also handled rock excavation for a large steam power plant of Imatran Voima Oy near Turku City on the southwest coast.

One of the companies carrying out the power development program, Kemijoki Oy, has a total of 42 Euclids which consists of 16 units of 15-ton payload capacity and 26 that carry loads of 22 tons. This owner reports that some of these "Eucs" have more than 20,000 hours of operation.

At the Pirttikoski project, 29 "Eucs" were used to remove 890,000 m^3 of rock from the power tunnel, tailrace and other work. The one way haul distance averaged one kilometer with 60 m difference in elevation. An additional 300,000 m^3 of earth and rock were removed from the channel. One of several big hydro power developments on the Kemi River, Pirttikoski is the biggest tunnel power project in Finland . . . it will have an annual energy output of 550 million k.w.h.

On the big tough jobs all over the world, and on the routine ones, too, Euclid equipment maintains high production at low cost. Have the Euclid dealer in your area supply facts and figures on the rear-dump or bottom-dump haulers and motor scrapers that fit your present and future work. You'll see why owners everywhere have found that Euclids are your best investment.

Euclid Rear-Dumps of 22-ton payload capacity being loaded with rock excavation in the power tunnel at the Pirttikoski project in northern Finland.

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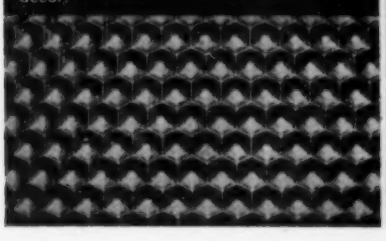

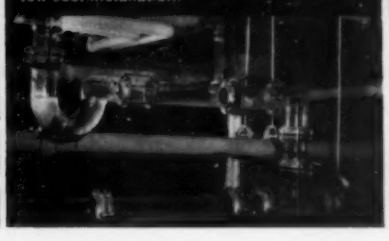

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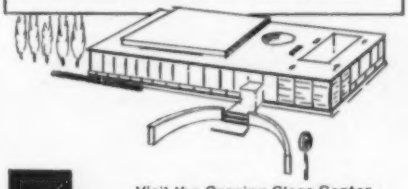

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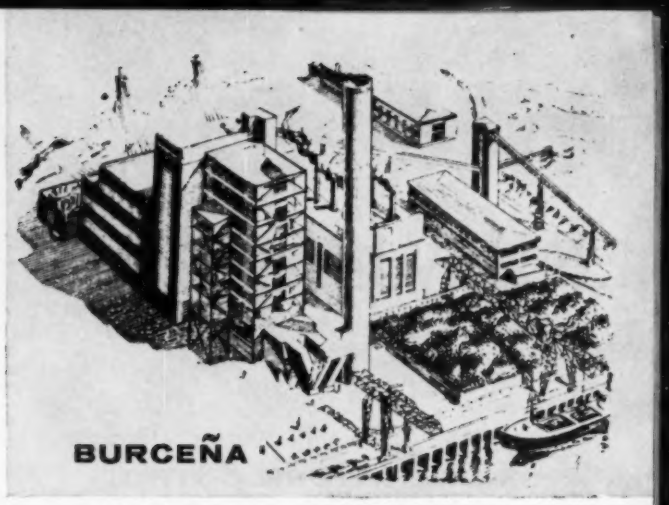

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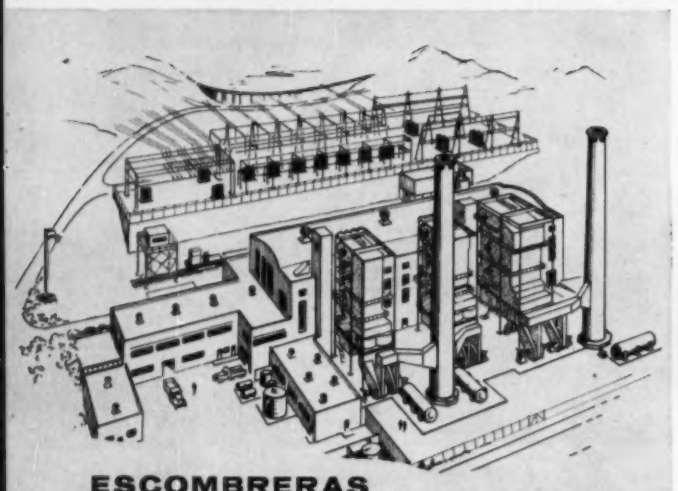

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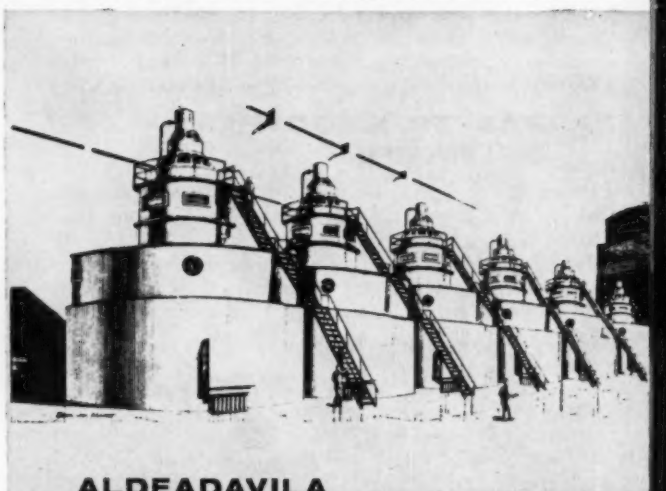

ALDEADAVILA

In Spain...These Large Plants Equipped With General Electric Products Mean More Power For Progress

Spanish industrialists have paid tribute to the role G-E equipment is playing in the power plants of today and of the future.

In recent years, two of the largest thermal power plants in Spain have been placed in operation, employing General Electric equipment. In both instances, the management has testified to the excellent results obtained, particularly as to dependability and efficiency.

Burcena Steam Power Plant. Recently, Iberduero, S.A., Spain's largest power company, placed a new 66,000 kw generating unit in service as an extension to their existing Burcena Station. It included a General Electric steam turbine generator and General Electric auxiliary electrical equipment.

Escombreras Steam Power Plant. The heart of Spain's new and largest thermal power plant is its three G-E steam turbine generators. The total yearly output of this plant—1,500,000,000 kilowatt hours—not only provides ample power for present industry and irrigation, but it has also encouraged development of new industries in this area.

Aldeadavila Hydroelectric Power Plant. General Electric equipment will also play a major role in this, the newest addition to Spain's growing community of large power plants. Being built by Iberduero, the plant will be equipped with six General Electric generators with a combined rating of 756,000 kva.

Power expansion programs like these in Spain are vital to the growth of industry and help more people to live better electrically. General Electric, with vast experience in the electric utility field, is anxious to work with you in every phase of your own power planning program. For full information contact your nearest G-E representative or write: *International General Electric Company, Dept. 59-6, 150 East 42nd Street, New York 17, N.Y., U.S.A.*

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YOUR Management Reading

All About Systems

Systems and Procedures covers all phases of business controls, including organization studies, work simplification and measurement, forms control, records management, budgets, selection and training of systems men. $10.00. (Prentice-Hall Inc., Englewood Cliffs, New Jersey, U.S.A.)

Selections from Europe

Here is a sampling of recent O.E.E.C. publications: Education and Training for Distribution summarizes activities in this field now going on in Europe. 152 pages, $1.75, 10/-, 700 Fr. fr. . . . Budgetary Control outlines methods which should be of interest to the small and medium-sized enterprise. 66 pages, $1.00, 5/-, 300 Fr. fr. . . . The Effects of Differential Tax Treatment of Corporate and Non-Corporate Enterprise discusses existing tax discrimination and appraises its effects on business organizations. 136 pages, $2.25, 13/-, 900 Fr. fr. (Organization for European Economic Co-operation, 2 Rue Andre Pascal, Paris 16e, France.)

Management's Mission

Business leaders and other influential observers give their views on business' place in American society in Management's Mission in a New Society, a report on the 28th Annual Business Conference at Harvard. 345 pages, $6.00. (McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y., U.S.A.)

Business Accounting

Accounting Systems in Modern Business reviews the basic knowledge of automation and electronic data processing, and reports on the most recent advances in systems work, controllership, business and office accounting. 451 pages, $7.75 or 60/-. (McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y., U.S.A.)

More About Standards

The 1959 Price List and Index of American Standards lists more than 1800 standards approved to date by the A.S.A. Also included are the international standard recommendations. (American Standards Association, 70 East 45th Street, New York, N. Y., U.S.A.)

Who's Who In Atomics

Profiles of over 200 industrial organizations active in the development and utilization of atomic energy in the U.S.A. and abroad are presented in the 1959 Atomic Industry Directory of Products. 132 pages, $2.50. (Atomic Industrial Forum, 3 East 54th Street, New York, N. Y., U.S.A.)

Bulletins from Industry

A new Metallizing Handbook (345 pages) covers all phases of modern metal and ceramic flame-spraying. $5.00. (Metallizing Engineering Co., Inc., 1101 Prospect Avenue, Westbury, Long Island, N. Y., U.S.A.). . . . Delta's Blue Book of case studies tells how power tools can automate operations, increase production and improve quality. (Delta Power Tool Division, Rockwell Mfg. Company, 4 North Lexington Avenue, Pittsburgh 8, Pa., U.S.A.)

YOUR Personal Affairs

The Luxury Cars

Among successful businessmen, interest is in luxurious and expensive automobiles, rather than the highly publicized small cars.

Besides their special design and finish, these cars are known for their performance. You can bring a car like the Rolls-Royce to a straight-line stop from a speed of 160 km/hr., with no dipping or swaying.

Rolls-Royce, Bentley, and Mercedes-Benz are the best known among the expensive European sedans. The Rolls Silver Cloud ($10,625 fob London) has a "works" body, leathery upholstery, and walnut paneling. Some amenities, like picnic tables, are built-in; others come as optional equipment—a dictating machine, hot and cold water for washing, electric razor, a telephone. The Long Wheelbase Rolls ($12,865) has a glass partition between front and rear seats.

Except for its radiator grill, the Bentley is a duplicate of the Rolls. The Continental ($15,000) has a special axle ratio for fast pickup and high top speed.

The Mercedes-Benz 300 D ($6,825 fob Stuttgart) has an optional four-speed hand gear shift. This car also comes in an exclusive convertible sedan model ($8,860 with automatic transmission, $8,500 with manual).

The best-selling of the American luxury automobiles is undoubtedly the Cadillac. Its Eldorado Brougham model ($13,075) this year had its four-door body custom-built by Pinin Farina of Italy. Air suspension is standard in all Cadillac models. And the driver looks out through one of the industry's largest windshields. Its 11,100 sq. cm. area curves around and over him.

For the man with ample sports car experience who is looking for luxury, there are the **gran turismo** cars, actually sports racing cars with coupe bodies. One of these, the Aston Martin DB 4 ($7,475) has a top speed of 270 km/hr, and will go from zero to 160 km/hr and back in 26 seconds. It is temperamental at speeds below 64 km/hr.

With another gran turismo, the Ferrari 250 GT California ($9000 fob Modena) you get a smooth ride, and the car can take bad turns at high speeds.

Two Products for the Sporting Businessman

If you train your own pointing bird dogs, you'll be interested in a new **Electronic Game Bird Releaser** that flushes pigeons, quail, or pheasant by radio impulse. The dog handler carries a small radio transmitter that releases a spring, throwing the bird 3 meters into the air. The handler has complete control from as far as 75 meters. Price: $250, from Stuart Mfg. Co., Inc., Box 1382, Farwell, Mich., U.S.A. . . . Latest luxury for golfers is an **"automatic caddie"** made by Japanese manufacturer Koden Seisakusho (fob price $200). It looks like a baby carriage, climbs up slopes, is worked by a tiny transmitter carried by the golfer.

Whatever the product, you're sure of dependable protection when it's packed in USS TIN PLATE

No matter what the need for tin containers, there's a USS Tin Plate specially designed for the packaging job. This versatile material provides dependable protection for a host of canned goods . . . petroleum products, foods, specialty items.

USS Tin Plate is highly resistant to food acids, affords maximum protection for the goodness and delicate flavor of foods . . . even under adverse storage and handling conditions. USS Tin Plate is produced from the highest-quality steel, with a controlled coating of tin that protects against pitting and corrosion.

If you are a user of tin plate, you can count on consistent high quality, dependable supply, and USS technical assistance – whether you specify USS FERROSTAN (Electrolytic Tin Plate), HOT-DIPPED COKE OR CHARCOAL TIN PLATE. All are available in standard coatings, grades, basis weights and sheet sizes. FERROSTAN is also available in coils of various weights.

For more information, discuss your needs with our distributor at the office nearest you or write to United States Steel Export Company, 100 Church Street, New York 8, N. Y.

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